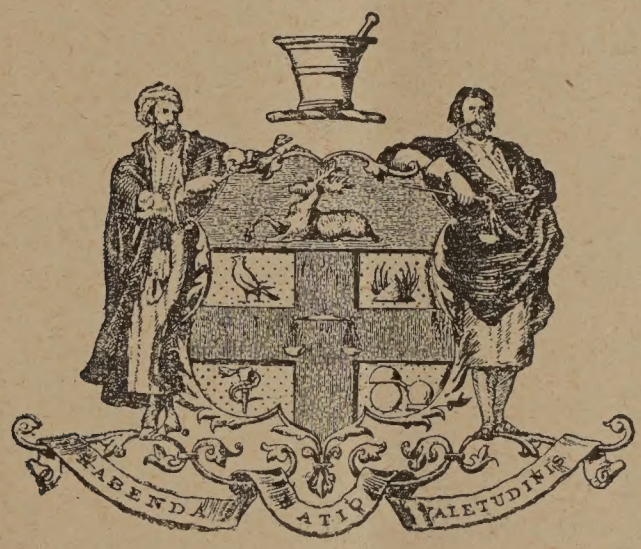
THE

PHARMACEUTICAL JOURNAL

ESTABLISHED 1841.

A Weekly Record of Pharmacy and Allied Sciences.



ROYAL COLLEGE OF SURGEONS OF ENGLAND
-1 JAN 97
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FOURTH SERIES—VOLUME III.

COMPLETE SERIES—VOLUME LVII.

JULY TO DECEMBER, 1896.

LONDON:

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN,

17, BLOOMSBURY SQUARE, W.C.

96

W. I. RICHARDSON, PRINTER,
4 AND 5, GREAT QUEEN STREET, LINCOLN'S INN FIELDS,
LONDON, W.C.

ROYAL COLLEGE OF SURGEONS OF ENGLAND
-1 JAN 97
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(FOURTH SERIES.)

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CONTRACTIONS OF TITLES.

The following is a list of the contractions and the corresponding full titles of Journals most frequently used in "The Month," and elsewhere in the "Pharmaceutical Journal." The titles prefixed by an asterisk (*) are those of official Journals.

Amer. Journ. Pharm. = American Journal of Pharmacy. Philadelphia. Monthly.

Annalen = Justus Liebig's Annalen der Chemie. Liepzig. Monthly.

* *Apot.-Zeit.* = Apotheker-Zeitung. Organ of the Deutsche Apotheker-Verein. Berlin. Twice a week.

* *Apot. Zeit. Rep.* = Repertorium der Pharmacie. Supplement to the Apotheker-Zeitung.

* *Archiv* = Archiv der Pharmacie. Berlin: J. Greiss. Monthly.

* *Berichte* = Berichte der deutschen chemischen Gesellschaft. Berlin. Once or twice a month.

* *Brit. Med. Journ.* = British Medical Journal, London. Weekly.

Bull. com. = Bulletin commercial. Supplement to L'union pharmaceutique. Paris: Pharmacie centrale de France. Monthly.

* *Can. Pharm. Journ.* = Canadian Pharmaceutical Journal. Toronto. Monthly.

Chem. News = Chemical News. London. Weekly.

Chem. Zeit. = Chemiker Zeitung. Cöthen. Twice a week.

Chem. Zeit., Rep. = Chemisches Repertorium. Supplement to the Chemiker Zeitung.

* *Comp. rend.* = Comptes rendus des séances de l'Académie des Sciences. Paris: Gauthier-Villars. Weekly.

* *Journ. Chem. Ind.* = Journal of the Society of Chemical Industry Monthly.

* *Journ. de pharm.* = Journal de pharmacie et de chimie. Paris: G. Masson. Twice a month.

Med. Press = Medical Press and Circular. London: A. A. Tindall, Weekly.

Mon. scient. = Moniteur scientifique. Paris. Monthly.

Münch. med. Woch. = Münchener medicinische Wochenschrift. Munich. Weekly.

Nouv. rem. = Les nouveaux rémèdes. Paris. Twice a month.

Pharm. Centralh. = Pharmaceutishe Centralhalle Dresden. Weekly.

Pharm. Post = Pharmaceutische Post. Vienna. Weekly.

Pharm. Zeit. = Pharmaceutische Zeitung. Berlin: J. Springer. Twice a week.

* *Proc. Chem. Soc.* = Proceedings of the Chemical Society. London. About twice a month.

Répertoire = Répertoire de pharmacie, archives de pharmacie et journal de chimie médicale réunis. Paris. Monthly.

Scient. Amer. = Scientific American. New York. Weekly.

Union pharm. = L'union pharmaceutique. Paris: Pharmacie centrale de France. Monthly.

W. I. RICHARDSON, PRINTER, 4 AND 5, GREAT QUEEN STREET, LINCOLN'S INN FIELDS, LONDON, W.C.

THE

PHARMACEUTICAL JOURNAL

VOLUME LVII. (FOURTH SERIES, VOLUME III.)

LONDON: SATURDAY, JULY 4, 1896.

JABORANDI AND ITS ALKALOIDS.

BY DR. B. H. PAUL AND A. J. COWNLEY.

Although jaborandi is defined in the British Pharmacopœia as the dried leaflets of *Pilocarpus pennatifolius*, it is certain that the drug met with in commerce, under the name of jaborandi, is frequently, in part, the produce of other species of *Pilocarpus* and, in some instances, even of plants belonging to another genus. As to the nature of the basic constituents of these different drugs, but little is known and the discrepancies in the descriptions given of pilocarpine are very suggestive of doubt whether the alkaloid referred to is always the same substance. This uncertainty is very evident from the account given of pilocarpine in Husemann's 'Pflanzenstoffe' as being "difficultly crystallisable," and from the statements in Watts' 'Dictionary of Chemistry' and Thorpe's Dictionary that it is "crystalline," while in other places the alkaloid is described as a syrupy liquid, very soluble in water.

The characters and tests given in the British Pharmacopœia and other pharmacopœias are not sufficiently distinctive for the identification of pilocarpine and they furnish no proof of absence of other bases capable of forming crystallisable salts with nitric or hydrochloric acid. In the examination of several kinds of jaborandi leaves described by Mr. Holmes in his papers on the botanical part of the subject,* we have endeavoured to test the individuality of the basic products extracted, by the melting points of the nitrate, and have in that way obtained evidence of differences which appear to point to the desirability of more minute investigation than we have yet been able to carry out, on account of the small quantity of material at our disposal. In testing samples of commercial pilocarpine nitrate obtained from Mr. Martindale similar differences of melting point have been observed; in one instance the salt melted at 141°·7 C., another sample was found to melt at 167°·2 C., while a third, supplied by Mr. Gerrard, melted at 150°·5 C.

A sample of the small-leaved jaborandi described by Mr. Holmes as Maranham, and named by Dr. Stapf *Pilocarpus microphyllus*, yielded 0·84 per cent. of alkaloid which was converted into nitrate and gave 0·45 per cent. of a crystalline salt melting at 160° C. A solution, containing 2 grains in the fluid ounce, when applied to the eye produced contraction of the pupil. On re-crystallisation from alcohol the salt was separated into two portions, the larger portion melting at 162°·7 C., while the other melted at 147°·7 C.

From the leaves described by Mr. Holmes as Aracati jaborandi. *Pilocarpus spicatus*, we obtained only 0·16 per cent. of alkaloid, This gave two crystalline nitrates, melting respectively at 151°·5 and 130°·5 C., an amorphous nitrate the base of which was soluble in water, also an amorphous alkaloid insoluble in water corresponding to the description of jaborine by Harnack and Meyer. Obviously these leaves are of little value as a source of pilocarpine.

The leaves of Ceara jaborandi, *Pilocarpus trachylophus*, yielded 0·4 per cent. of alkaloid, but only 0·02 per cent. of crystallisable nitrate.

From the leaves of *Pilocarpus jaborandi* we obtained 0·72 per cent. of alkaloid yielding 0·67 per cent. crystallisable nitrate with a melting point of 161° C.; it was separable on recrystallisation into nearly equal portions, melting respectively at 162°·67 and 158°·3 C.

A sample of reputed jaborandi leaves was found on examination to contain—

Leaves of *Pilocarpus jaborandi*	12
,, ,, *trachylophus*	38
Stalks	50
	100

On analysis it yielded 0·13 per cent. of alkaloid, rather more than half of it being convertible into crystalline nitrate that was separable by recrystallisation into portions melting at 157°·7 and 147°·7 C.

The following table gives a concise statement of our results :—

	Total Alkaloid Per cent.	Crystallisable Nitrate Per cent.	Recrystallised Nitrate.	Melting Point.
Pil. spicatus	0·16		·03 ·04	151°·5 130°·5
,, *trachylophus*	·4	·02		
,, *jaborandi*	·72	·67 (161° m.p.)	·37 ·30	162°·7 158°·3
,, *microphyllus*	·84	·45 (160° m.p.)	·23 ·22	162°·7 147°·7

From these results it is apparent that while the several kinds of jaborandi leaves met with in commerce differ considerably in the amount of alkaloid they contain, the product obtained is probably always a mixture of two or more distinct alkaloids. The question whether the alkaloids hitherto described are natural constituents of the leaves or products of the alteration of pilocarpine cannot at present be answered. According to Harnack* and Merck, jaborandi leaves yield four bases—pilocarpine, pilocarpidine, jaborine, and jaboridine, the two latter being formed respectively from the two former. Hardy and Calmels,† on the contrary, consider that pilocarpidine is not a natural constituent of the leaves, but a product of the alteration of pilocarpine effected in the extraction, while they question the existence of jaboridine. But the definition of all these bases is defective. The pilocarpidine of Harnack is said to form a finely crystallisable nitrate, but Hardy and Calmels state that the pilocarpidine produced by them from pilocarpine gives "basic salts that exactly resemble those of pilocarpine," but are "gummy." Additional uncertainty has been produced by inaccuracy in the published abstracts of original memoirs, thus, for instance, the abstract of Hardy and Calmels paper in the *Journal of the Chemical Society*‡ states that nitric acid

* *Pharm. Journ.* [4], i., 520.

* *Chem. Centralb.*, 1885, 628; *Journ. Chem. Soc.*, l., 85.; and *Pharm. Journ.* [3], xvi., 106.

† *Compt. rend.*, 102, 1116.

‡ *Journ. Chem. Soc.*, l., 900.

' has no action upon pilocarpine," whereas the original says that it has only the effect of converting it into pilocarpidine.*

In order to ascertain whether the differences of melting point observed in the nitrate obtained by recrystallisation, as well as in commercial samples of the salt were due to alteration of pilocarpine, we submitted several portions to the action of heat which is stated to have the effect of converting pilocarpine into jaborine, and also into pilocarpidine. In operating upon the salt described as "pure pilocarpine nitrate" and melting at 141°·7 C., we found that, after being heated in solution for fourteen hours in contact with air, there was a reduction of the melting point to 133°. The salt was still crystalline, and on recrystallisation from alcohol, it was separated into two portions—one crystalline amounting to 80 per cent. of the original quantity, melted at 138° 2, while the other was gummy, and contained a base insoluble in water. Evidently the alteration in this case was only partial.

Another portion of the same salt was recrystallised from alcohol in fractions, but without any considerable alteration in the original melting point being effected, as in the case of the nitrate obtained from the samples of jaborandi leaves in the experiments above described.

In connection with the high melting-point of one of the samples of commercial nitrate, for which we are indebted to the kindness of Mr. Martindale, it is of interest to mention that when administered by injection of eight drops of a 3 per cent. solution, it produced the unusual effects of intense desire to micturate, with strangury and subsequent vomiting. According to the account furnished by Dr. Owen Lankester to Mr. Martindale, this occurred on three separate occasions, while the solution of another sample of the salt simply produced the sweating characteristic of jaborandi.

We hope to be able to follow up this inquiry and, by operating upon larger quantities of definitely authenticated material, to obtain some better knowledge of the bases obtainable from jaborandi, as well as means of distinguishing those of which little more than their names can be learnt from published accounts.

* *Compt. rend.*, 102, 1562.

A SPURIOUS MARANHAM JABORANDI.

BY E. M. HOLMES, F.L.S.

Curator of the Museums of the Pharmaceutical Society of Great Britain.

Genuine jaborandi (*Pilocarpus jaborandi*) has for some months past been a scarce article in commerce. The small leaves of the Maranham jaborandi (*Pilocarpus microphyllus*) have, however, been procurable, and have met with a ready sale to buyers for Germany, presumably for the preparation of pilocarpine, of which they contain a good percentage. Some of the more recent importations of these leaves have contained a few bales of leaves almost indistinguishable from them to the eye of a casual observer, but differing entirely in the absence of oil cells from their tissue. Some of these have already passed into commerce, and attention has probably been directed to them by their not yielding pilocarpine.

From samples sent me by Messrs. Wright, Layman, and Umney, and Messrs. W. J. Bragg and Co., of Liverpool, and from fragments of flowers and fruit which Mr. J. O. Braithwaite kindly selected from a quantity of the leaves, I have been able to identify the family and genus to which the plant yielding them belongs.

For practical purposes the leaves, or more properly, leaflets, may be recognised by the absence of oil cells, by their reticulated venation, the veinlets being usually pellucid, by not tapering to a narrow base, and by the very short hairy petiolule, about 1 Mm. long. The upper surface is glossy, of a brownish-green tint, not greyish-green as in *P. microphyllus*, and the midrib, on the upper surface, is minutely hairy, and the lateral veins form a more acute angle with the midrib. Usually there are small rounded or oval leaflets about ½ Cm. long, mixed with the larger leaflets, which average 2½ to 3 Cm. long; these are never present in the true Maranham jaborandi. The presence of these small leaflets should therefore at once serve to the unaided eye as a guide to the presence of the spurious drug.

So far as I have been able to ascertain, the plant yielding the leaflets is hitherto undescribed, and it may, therefore, be useful to record the details at present obtainable. The leaves (*a*) are erecto-patent, alternate with the rachis, which is covered with minute incurved ferruginous hairs, imparipinnate, with four or rarely five pair of alternate leaflets, which are small and rounded in the lowest

SPURIOUS MARANHAM JABORANDI.

a Young twig, leaflets two-thirds natural size. *b* Terminal leaflet showing portion of reticulated venation. *c* Impe fect flower showing ovary and style. *d* Pericarp one-half natural size. *e* Young fruit with pedicel.

pair, becoming gradually larger towards the terminal leaf, which is largest, reaching 7 or more Cm. long, by 1½ Cm. broad (*b*). The leaflets vary in shape from orbicular to ovate, elliptical, or rhomboidal-lanceolate, they are emarginate, glossy and brownish-green above, with the midrib hairy, especially towards the base, paler and glabrous beneath, and are furnished with a short petiolule, 1 Mm. long. The surface is minutely reticulated with pellucid veinlets. In some leaflets, however, the veinlets are opaque, partly or wholly. The centre of each areola is paler and semi-translucent. The leaves of the young shoots are comparatively thin.

The leaflets have usually all the network of the veins translucent, and the centre of the areolæ between the veinlets is paler than the margin next to them. From this appearance of the veinlets I was at first led to suppose that the leaves belonged to some anacardiaceous plant, especially as the fruit appeared to be one-seeded. The examination of the young ovary, however, at once showed that with ten ovules it could not belong to that natural order. The translucency of the veins is, however, due to quite another cause than the secretory cells characteristic of the veins in that natural order. Professor Greenish was kind enough to cut some sections of the leaf for me, and these showed that palisade cells were

absent over the veins, and that the small cells which replace them are free from chlorophyll. The paler semi-translucent appearance of the centre of the areolæ is apparently due to hollow spaces in the spongy parenchyma, the cells of which contain but little chlorophyll.

Only two imperfect flowers were met with (*c*) and in these the calyx was torn; only five stamens were present and a portion of a petal. It was, however, possible to determine that the calyx was membranaceous; the ovary sessile, densely hairy, furnished with a style equalling it in length, with a capitate stigma, and containing ten oblong ovules in two rows. The halves of a hairy pericarp (*d*) found with the leaves showed that the fruit is one-celled, oblique, inflated, about a centimetre long and 7 Mm. broad, with a partially separable endocarp, attached to a slender glabrous pedicel 1½ Cm. long (*e*). On showing the flowers to Mr. W. B. Hemsley, at the Kew Herbarium, he suggested that they might belong to the genus *Sweetia*, in Leguminosæ. On comparing the leaves of that genus, I found that they did not correspond with those of the drug, nor were the fruits like the half pericarps I had. On looking through the allied genus *Swartzia*, however, I found that there were three species with very similar leaves and two which had very similar pods. These are *S. pilulifera*, Benth., *S. mollis*, Benth., and *S. matthewsii*, Benth.

S. pilulifera differs in having only two pairs of opposite leaflets, a very short inflexed style, and a stalked ovary.

S. mollis differs in its very hairy leaflets and glabrous ovary, as figured in 'Ann. Sc. Nat.' [2], xx., t. 4.

S. matthewsii differs in its semi-lunate pod, and in the pedicel of the fruit being only two to three lines long and the ovary containing only two to three ovules.

The false Maranham jaborandi therefore probably belongs to an undescribed species, characterised by its leaves having four pairs of leaflets, with a terminal one, the leaflets having strongly reticulated venation, an emarginate apex, and being alternately arranged on the rachis; by the hairy ovary containing 10 ovules, the slender style as long as the ovary, the capitate stigma, and the short inflated pod about 1 Cm. long, sessile on a slender pedicel 1½ Cm. long. Until further specimens are procurable from which it might be determined if only one petal and five stamens are present, the plant might be provisionally named *Swartzia decipiens*.

NOTES AND FORMULÆ.

Tooth Powder for Discoloured Teeth.

Powdered potassium chlorate, 14 grammes; powdered borax, calcined magnesia, precipitated chalk, of each 28 grammes; oil of peppermint, 10 drops (*Pharm. Zeit.*).

Oil of Peppermint.

Bukowsky, who has recently been conducting some researches on oil of peppermint, finds that the superior qualities of oil of peppermint give an iodine number (iodine absorbed per cent.) lower than 81 (*Ph. Zeitchr. f. Russland*). The numbers vary between 54·1 and 102 97. In the same oils the volume of liquid boiling from 160 to 220° (the least volatile portions, which consist almost entirely of saturated compounds) varies between 86 and 96 per cent.

Creosote Pills.

Schreiber suggests the employment of dried egg albumin for massing creosote, thus:—Creosote, 6 grammes; dried egg albumin, 3 grammes; distilled water, 10 drops. Mix and add powdered liquorice and extract of liquorice, of each sufficient to mass. Divide into sixty pills (*Rev. de Thérap. Med. Chirurg.*, lxiii., 157).

ON THE COMPOSITION AND ANALYSIS OF COMMERCIAL CREAM OF TARTAR.*

BY ALFRED H. ALLEN.

When prepared by boiling crude tartar or "argol" with water, filtering, and crystallising the salt from the clear liquid, cream of tartar always contains more or less calcium tartrate, which, though nearly insoluble in cold water, dissolves with moderate facility in a hot solution of acid tartrate of potassium. In 1880, I described some experiments made to ascertain the extent to which calcium tartrate could occur unavoidably or legitimately in cream of tartar. To avoid reference, I may recapitulate the nature and results of these experiments, as described in the *Analyst*, vol. v., p. 114.

Pure calcium tartrate was prepared by precipitating calcium chloride by neutral sodium tartrate prepared from pure tartaric acid and sodium carbonate. The analysis of the salt showed that it was strictly neutral in composition.

Pure potassium hydrogen tartrate was prepared by dividing a solution of pure tartaric acid into two equal portions, neutralising one with potassium carbonate, and adding the other.

Weighed quantities of the last product were dissolved in known measures of boiling water, an excess of moist tartrate of calcium added, the liquid boiled for a short time, filtered boiling hot, and the crystals of cream of tartar deposited on the cooling of the filtrate were analysed. In this manner, products were obtained which contained as much calcium tartrate as would dissolve in the measure of boiling solution of tartrate of potassium employed. The only variable condition was the proportion of water used.

It was not found practicable to dissolve the acid tartrate of potassium in fifteen times its weight of boiling water. Hence, one in twenty-five was the strongest solution employed. The following are the percentages of insoluble ash and anhydrous neutral calcium tartrate contained in the different products:—

	Proportion of Water used.	Insoluble Ash.	$\times 1{\cdot}88 = CaC_4H_4O_6$.
1.....	25 parts.....	3·10 per cent.....	5·82 per cent.
1 A.....	25 ,, ...	3·28 ,, ...	6·16 ,,
2.....	50 ,, ...	3·40 ,, ...	6·39 ,,
2 A.....	50 ,, ...	3·30 ,, ...	6·20 ,,
3.....	75 ,, ...	4·40 ,, ...	8·27 ,,
3 A.....	75 ,, ...	4·80 ,, ...	9·02 ,,

From these results it appears that the proportion of calcium tartrate contained in cream of tartar is greater the larger the proportion of water employed for solution; but that, with the quantity of water likely to be used in practice, the product will not contain more than nine or ten per cent. of calcium tartrate. This is fully confirmed by the experience of myself and others as to the composition of commercial cream of tartar.

The British Pharmacopœia test corresponds to a minimum of 92·15 per cent. of acid potassium tartrate on the moisture-free sample. The United States, German, and Japanese Pharmacopœias require a purity of 99 per cent. as determined by the direct titration of the original sample.

In a recent case at Belfast, in which a vendor of cream of tartar was prosecuted on the certificate of Sir Charles Cameron for selling an article adulterated with 17·93 per cent. of tartrate of lime, Mr. S. Templeton, F.I.C., of the Belfast School of Applied Chemistry, was called for the defence. In the face of the very precise standard of purity adopted by the Pharmacopœia, Mr. Templeton stated that the British Pharmacopœia allowed a variable quantity of calcium tartrate up to about 15 per cent., and that he would consider cream of tartar containing that proportion as a

* Abstract of a paper read before the Society of Public Analysts on June 3, 1896.

fairly good commercial article! When taxed with this statement in the Belfast press Mr. Templeton urgued that the Pharmacopœia test only refers to 20·9 per cent. of the radical potassium, and that it is not justifiable to assume that all this is present as acid potassium tartrate. Mr. Templeton further suggests that some may be present as neutral potassium tartrate, but he does not explain how he would account for the presence of any notable quantity of such an extremely soluble salt in an article prepared after the manner of cream of tartar; and, unfortunately for Mr. Templeton's argument, the British Pharmacopœia test includes any neutral potassium tartrate, and credits it as bitartrate! Not only does it do this, but 116 parts of $H_2\overline{T}$ produce on ignition as much K_2CO_3 as is yielded by 188 of $KH\overline{T}$; so that if a sample consisted wholly of neutral potassium tartrate it would show by the British Pharmacopœia test 162 per cent. of acid tartrate!

Of late years a good deal of cream of tartar has appeared on the market which has been prepared by a method essentially different from that hitherto considered. It appears to have been produced under one of the modifications of the patent of A. Martignier (No. 20,078, of 1889). According to this process, neutralised wine lees are treated with an excess of a saturated solution of potassium sulphate, whereby calcium sulphate and neutral potassium tartrate are formed. The gypsum is separated, and the solution of potassium tartrate decolorised with animal charcoal and treated with sulphuric acid in quantity sufficient for the reaction:—

$$2K_2T + H_2SO_4 = K_2SO_4 + 2KHT.$$

It is evident that an article manufactured in this manner will be free from calcium tartrate, but will be liable to contain sulphates of potassium and calcium. In fact, much of the cream of tartar of commerce now contains several units per cent. of calcium sulphate, just as an article made in the old way contained more or less calcium tartrate as a normal impurity. Both impurities are perfectly neutral, useless and harmless, so far as the consumer is concerned, but with a little trouble they both could, and would, be removed if the present British Pharmacopœia test were raised to the standard adopted in some other countries.

If a sample of cream of tartar be free from uncombined sulphuric and tartaric acids, and contains only calcium and neutral potassium sulphates and potassium acid tartrate, it will before ignition neutralise a volume of standard alkali exactly equivalent to the acid required to neutralise the sample after ignition, including the alkalinity of the insoluble ash.

If $KHSO_4$ be present, the acidity of the original sample will be in excess of the total alkalinity of the ash. If $Ca\overline{T}$ be present, the acidity of the sample will be less than the alkalinity (total) of the ash. As $KHSO_4$ and $Ca\overline{T}$ are incompatible in solution, both impurities cannot be present in the same sample of genuine cream of tartar. In an article prepared by crystallisation from water, and subsequently adulterated with $KHSO_4$ (which has been actually used as a substitute for cream of tartar, under the name of "tartaline"), the two salts might co-occur.

A sample containing neutral potassium tartrate would yield on ignition an ash having a greater acid neutralising power than the acidity of the original cream of tartar.

It is evident that when applied to samples of cream of tartar containing calcium sulphate, the existing British Pharmacopœia test will indicate a proportion of acid potassium tartrate materially below the truth. Every unit of (anhydrous) calcium tartrate present will reduce the indication of acid potassium tartrate by 2·77 per cent., so that a sample containing only 4 per cent. of $CaSO_4$ will show by the British Pharmacopœia method only 88·92 of acid tartrate. Such a result is manifestly intolerable, and it is to be hoped that the next edition of the British Pharmacopœia will abolish this anomaly, and place the tests for cream of tartar on a level with those adopted in other countries. I may say that I have communicated with Dr. Attfield on the subject, but he declined to furnish any indication as to what might be expected, though in his own practice he favours direct titration.

It is, of course, important that the Pharmacopœia methods should be as simple as possible, but the existing test for cream of tartar scarcely complies with this requirement. A direct titration of the original sample with standard caustic alkali and phenolphthalein would be preferable in every respect, if adulteration by acid potassium sulphate were prevented by fixing a limit to the amount of sulphates admissible. Where further information is required, it is readily obtainable by noting the acid-neutralising power of the soluble and insoluble ash, and comparing them with the acidity of the original sample as already described. For this purpose I would propose the following process:—

1. Dissolve 1·881 grammes of the moisture-free sample in hot water and titrate with decinormal caustic alkali and phenolphthalein. In the absence of acid potassium sulphate, each C.c. of alkal required represents 1 per cent. of acid potassium tartrate in the sample.

2. Ignite 1·881 grammes of the moisture-free sample at a dull red heat for ten minutes, without attempting to burn off all the carbon. Boil the product with water, filter, and wash the insoluble carbonaceous residue.

(*a*). Titrate the filtrate with decinormal hydrochloric acid and methyl-orange. In a pure sample the measure of acid required will be exactly equal to that of the alkali consumed in process 1. Each C.c. of *deficiency* represents 0·50 per cent. of calcium tartrate, $CaC_4H_4O_6$; 0·36 per cent. of calcium sulphate, $CaSO_4$; or 0·60 per cent. of neutral potassium tartrate. Any *excess* points to the presence of acid potassium sulphate, $KHSO_4$, each C.c. of difference representing 0·71 per cent. of that salt. If the titrated liquid be treated with barium chloride, the weight of the precipitate of barium sulphate obtained will give the means of directly determining the proportion of calcium or potassium sulphate, and of deducing the calcium tartrate.

(*b*). Ignite the carbonaceous residue, dissolve in 20 C.c. of decinormal acid, filter if necessary from any insoluble residue of sand, barium sulphate, etc., wash, and titrate the filtrate with decinormal alkali and methyl-orange. The measure required represents the calcium of the sample. Each C.c. corresponds to 0·50 per cent. of calcium tartrate, or 0·36 per cent. of calcium sulphate (anhydrous).

The quantity of cream of tartar directed to be employed in the foregoing process is somewhat smaller than is desirable. Hence in cases of importance it would be preferable to operate on a double quantity, that is, 3·762 grammes. Of course, the percentages of constituents corresponding to each C.c. of decinormal acid and alkali will, in this case, be one-half of the amounts stated above.

In the above process I have followed the direction of the British Pharmacopœia to operate on the moisture-free sample, but in practice it would be easier to analyse the original sample and determine the moisture on a separate portion, making any allowance that might be necessary.

In exceptional cases it may be necessary to examine cream of tartar by determining the total tartaric acid, but the analysis of such samples is outside the scope of this paper.

BISMUTH PASTE FOR ORCHITIS, SUNBURN, ETC.—A thick paste of bismuth subnitrate with water is one of the best applications for swollen testicle. It relieves the pain and burning sensation, and the swelling rapidly subsides. It is equally useful for burns and scalds and as an application for sunburn, blistered skin, and chafing (*Mod. Med*, v., 12).

PHOTOGRAPHY FOR CHEMISTS.

PHOTO-MICROGRAPHY.

The ordinary method of drawing an object seen under the microscope is by means of the camera lucida or neutral tint glass, and whilst in the hands of the expert draughtsman this may give successful results, it cannot be denied that there is always a danger of one drawing what one knows ought to be or what one fancies one sees rather than what actually exists. When, however, photography is used to obtain permanent records, the personal equation of the observer, at least, is eliminated.

There are many chemists who possess microscopes and many also who use the camera, and the combination of the two places not only a greater power in the hands of the microscopist but also a decidedly entertaining amusement at his command. It does not require elaborate apparatus or great outlay, and as it can be carried on during the day or in the evening after business is over, it need not absorb a very great amount of time, and frequently other little things may be done meanwhile.

The essentials are a light source, a microscope, a camera, and objects. The expert microscopist will be at a far greater advantage

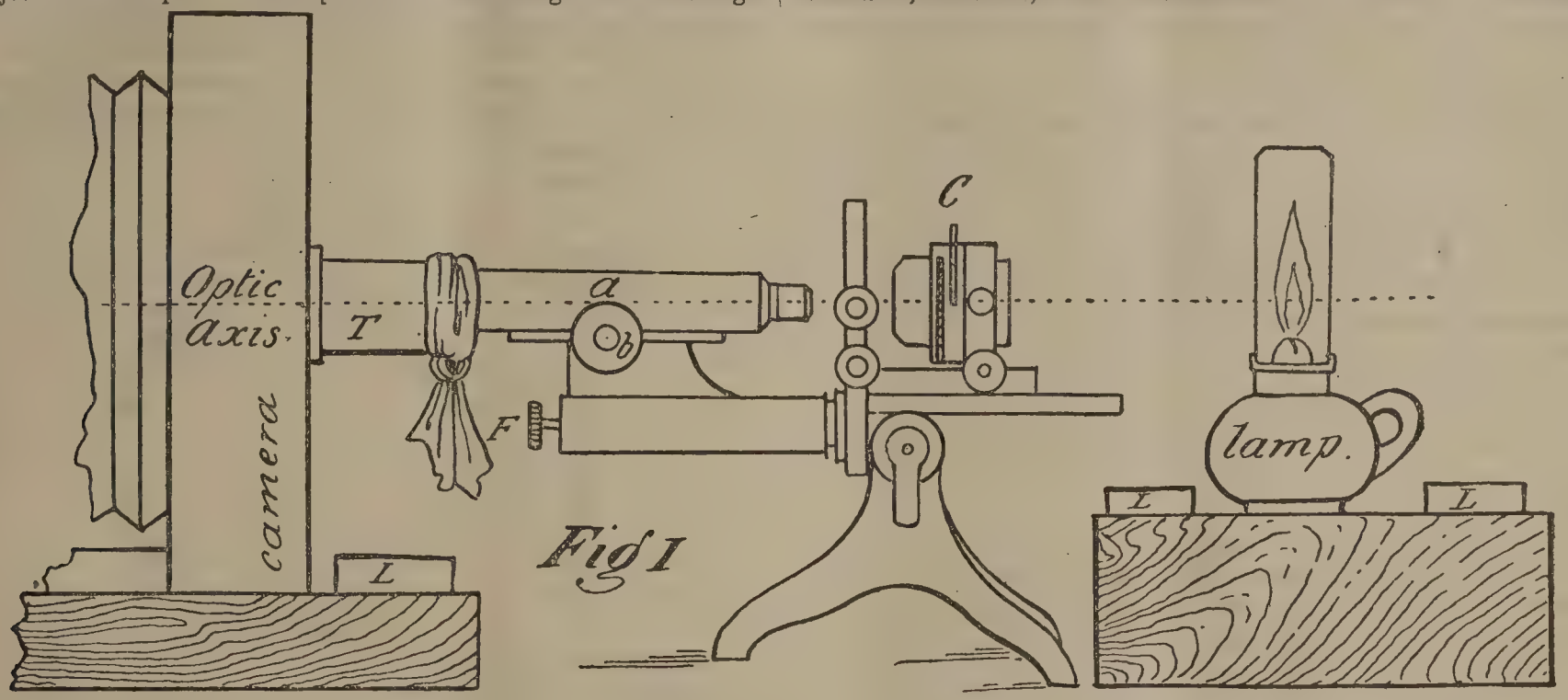

FIG. 1.—*a*. Microscope tube. *b*. Coarse adjustment. *c*. Substage condenser. *F*. Fine adjustment. *T*. Cardboard tube. *L L L*. Blocks of lead.

than the photographer, because the former knows all the motions of the microscope and has but little to learn.

The light source may be either daylight or artificial light, and we may at once dismiss the first by saying that better results with less trouble can be obtained by using artificial light, which may be either limelight or lamplight, or from magnesium ribbon. Limelight is extremely convenient, but as it entails some outlay, which in this article it is proposed to avoid, it will not be considered. Magnesium may also be dismissed as being more nuisance than it is worth, owing to the difficulty of keeping the burning end of the ribbon just at one spot. Lamplight should take the form of the ordinary microscope lamp, although, really, any flat-flame lamp with wick slit of preferably one inch in length may be used.

See that your wick is quite dry, and that you have the best paraffin; dissolve one ounce of camphor in every pint, fill your lamp about three parts full, light the wick, and turn it till the flame is about three-quarters of an inch high; allow to burn for fifteen minutes, and then turn it up as far as it will go without flaring or smoking, let it burn for another five minutes, and if there is no sign of smoking all will go well. The lamp should always be turned with the edge of the flame to the microscope, the flat of the flame should never be used except with a bull's-eye. There is a considerable divergence of opinion on this point, but experience shows that far finer results as regards definition are obtained when the edge of the flame is used, the only drawback being that one gets but a line of illumination down the centre of the image, but this is quite enough for all work with high powers, and with low powers the flat of the flame and bull's-eye may be used.

The camera need not be an elaborate affair; of course if one is in use for ordinary photography, no matter what size it is, it can be used. But to those who do not possess a camera, it is by no means difficult to rig up an apparatus, which though costing but a few shillings, will serve equally well as a special outfit costing quite as many pounds. When a camera has to be made it is advisable to make it of small size, and it will be found that a quarter plate, $4\frac{1}{4}$ by $3\frac{1}{4}$ ins., will be quite large enough for all practical purposes. The length of the camera is important, for practically upon the extension of the camera depends the amplification of the image. It is advisable, therefore, to have a camera which will extend to at least 4 feet 6 inches, as it can then be used either with or without an eye-piece, a question that will be discussed later on.

In making a camera, the first thing to do is to purchase your dark slide. Cheap dark slides with a focussing screen frame may be obtained from B. J. Edwards and Co., of The Grove, Hackney, and it is advisable to purchase the two because one of the main difficulties in making a camera at home is to obtain perfect register between the focussing screen and sensitive plate. The camera should be made in three sections, sliding one within the other, and that portion nearest the microscope should be the larger. A very stout varnished millboard can be bought; this is nearly a quarter of an inch thick. Measure the exact size of your focussing screen frame, which we will suppose to be $5\frac{1}{2}$ by $4\frac{1}{2}$ inches. We shall then want a piece 19 inches by 20 inches; this must then be cut into strips 19 inches long, two measuring $5\frac{1}{2}$ inches in width, and two $4\frac{1}{2}$ inches in width. These when joined up at the edges will form a box 19 inches long by $5\frac{1}{2}$ by $4\frac{1}{2}$ inches. To form the corners it is advisable to get a carpenter or joiner to make angle pieces of teak or beech, the section of which will be somewhat like

an L, with equal width of the vertical and horizontal arms. On to these angle pieces, which must be about 1 inch wide and 19 inches long, the millboard may be fastened by fish glue and short brass brads; the angle pieces must be inside. Having made this box, fasten the focussing frame on to one end with fish glue and brads. Now measure the exact external size of this box and procure some more millboard, and fix up in exactly the same way, so that it will just slide outside the other box. You will then have a camera with a sliding body, which will extend to 36 inches and close up to 18 inches. If thought desirable a third section may be added, but this will hardly be required. In place of millboard it is possible to use black twill, lined with ruby fabric, and the assistance of a lady will here be very valuable, as ladies, as a rule, are handier with the needle than men. What is wanted is a sleeve of black cloth with elastic run into the four edges so as to make it contract and enable it to be pulled out. No measurements need be given for this, as any lady can make it, provided you give the size of your focussing frame.

If cloth is used, the focussing frame must be screwed to a stout wooden frame, which is provided at both sides with brass tongues and screws to screw into a stout wooden plank, so as to keep it upright. The millboard is preferable.

To make the camera front it is merely necessary to procure a piece of stout teak of the same size as the back to this fasten the millboard or cloth sleeve. A hole must be cut exactly in the centre, of such a diameter as to take the tube of the microscope easily, with about a quarter of an inch to spare. Now procure a piece of cardboard postal tube about 4 inches long, and glue this into the hole in the front of the camera. So far our camera is fairly easy to make, but we now come to the base board; this should be about 8 inches wide, at least 8 feet long, and 1 inch thick—2 inches in thickness is better. It should be well planed on one surface at any rate; teak, beech, mahogany, or oak are the best woods, pine or deal should not be used. Draw a straight line all down the middle of the planed surface, the use of this will be seen afterwards.

The microscope may be of any pattern as long as the body may be turned absolutely horizontal. Most modern microscopes can be placed in this position, but very frequently they are extremely unsteady when so placed. In such a case have two iron shoes screwed to the long base board, and under these shoes slip two of the legs of the microscope; for the third foot have a hinged shoe with screw so that it can be placed over the foot and screwed up tight so as to hold it steadily. Some modern microscopes have a horseshoe foot, in this case procure about four pounds of lead in a block and place this over the foot.

It is almost essential that the microscope should have a substage condenser, but if this does not form part of the outfit, then a low power objective should be placed below the stage.

The objectives will, of course, be already part of the outfit, but for those who wish to purchase new ones, there are few which can beat the new hard semi-apochromats of Reichert, of Vienna, a 3 Mm. of this type of quite new construction having passed most successfully through some very severe tests. Still, good work can be done with an inch, half-inch, or quarter-inch, though better work can of course be done with fine diatom markings, etc., with a one-sixth or one-eighth.

In ordering new objectives it is essential to ensure their being corrected for the chemical rays, though with anything higher than a one-sixth inch this can be ignored. For objectives of lower power it is advisable to use a strong tincture of litmus in a flat-sided cell or tank of about half an inch internal measurement. Such tanks may be bought from any photographic dealer, as they are designed for use with the optical lantern. The action of the litmus solution is to cut out or absorb all the yellow rays, by which in the ordinary way focussing is effected, and leave only the blue and violet, to which the plate is most sensitive. Any old objectives can, however, be corrected by an optician for a few shillings.

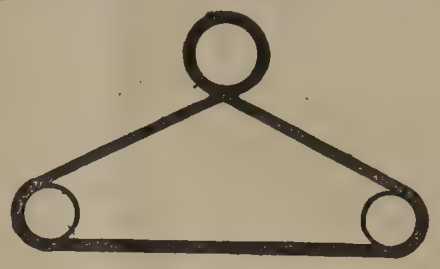

FIG. 2.

It is essential that the microscope should have a fine adjustment and a good one, that is, it should work steadily, so that when in use the image of the object should not shift from side to side. If this is underneath, as shown in Fig. 1, and, as is usually the case, it has a groove in the milled head, a piece of fine silk twist or catgut should be passed over it and then carried round two ordinary cotton reels with grooves cut in them, as shown exaggerated in Fig. 2. One of these reels should be provided with a cross saw cut, as in Fig. 3, into which can be fitted a square-sided rod of brass fastened to a long handle, which is supported on wooden pillars, to

FIG. 3.

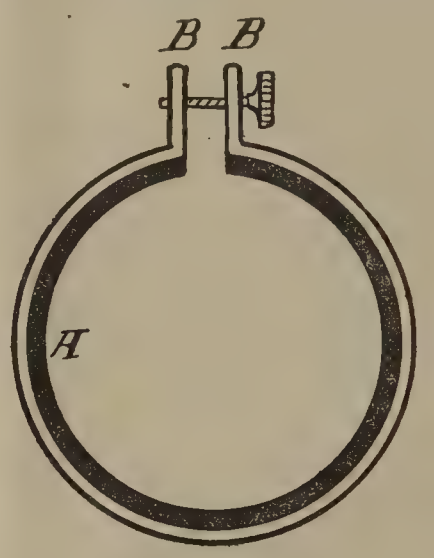

FIG. 4.

the back of the camera. At this point it ends in a milled head, which enables the operator whilst examining the focussing screen to manipulate the fine adjustment. If the fine adjustment has no groove, then a small collar of brass lined with a couple of thicknesses of box cloth, and a screw working through two eyelet holes, as shown in Fig. 4, may be used; this slipped round the fine adjustment and tightened up and connected with the long brass handle will enable fine focussing to be perfected. A is the box-cloth and BB the tongues with screw.

The question as to whether an eye-piece should be used or not depends to a great extent upon individual taste, but it has this great advantage, that when an eye-piece is used, the extension of the camera is considerably less for any given magnification, in comparison with that required when no eye-piece is used. The eye-pieces in general use are the Huyghens, Ramsden, orthoscopic, compensating and projection oculars. For those who intend to do really good work in photo-micrography, the projection oculars should be obtained. They are made by several firms, Reichert, Zeiss, Swift, Powell and Lealand, and Beck, and usually they are made in four sizes, 2 and 4 for Continental tube length, and 3 and 6 for English tube length, price £2 each.

There is one point which it is just as well to note now, and that

is that the ordinary ground glass as supplied by camera makers is utterly useless for focussing upon. It should be replaced by a dry plate treated as follows:—Place the dry plate without exposure to light in a clean solution of hypo. (1 : 4), allow to remain for fifteen minutes, then wash thoroughly for an hour in running water, allow to drain, and immerse for ten minutes in 5 per cent. solution of sulphuric acid, finally rinse and immerse for the same time in 2½ per cent. solution of barium chloride, and wash well and dry. This treatment precipitates a very fine deposit of barium sulphate in the gelatin which is easy to focus on. Instead of this, a sheet of plate glass about $\frac{1}{8}$th inch thick may be used, on one surface of which, that of course nearer to the microscope, fine lines crossing each other at right angles in about half inch squares have been ruled with a diamond. When an eye-piece is used on this so that the ruled lines are sharp, it can very readily be detected when the image is sharp.

The extension of camera determines the linear magnification of an object, and as half the value of a photo-micrograph for educational purposes is dependent upon the degree of magnification being known, it is just as well either to work always with a given extension for each power or to calculate out each time the amplification. "The linear amplification of a projected image is the distance between the image and the posterior focus of the lens system, divided by the focal length of the system. The posterior focus of the lens system corresponds in the microscope exactly to the upper side of the ocular. It follows from the preceding data that the amount of amplification of an image for any distance between ocular and screen by dividing this distance, expressed in millimetres, by the focal length of the objective used, and multiplying the quotient obtained by the number of the ocular" (Van Heurck). To give an example, a 3 Mm. objective was used with a No. 2 projection ocular at a distance of 150 Mm., required the amplification:—

$$\frac{1500}{3} \times 2 = 1000.$$

To those who use our absurd English measures the following rule may be used. The initial power of a lens is found by dividing 10 (the nearest average distance of distinct vision in inches) by the focus of the objective, thus $10 \div \frac{1}{8} = 80$, the initial power of $\frac{1}{8}$ inch. If this be multiplied by the power of the eye-piece, it gives the magnifying power of the combination; thus with an eye-piece magnifying 3 times we have $80 \times 3 = 240$ diameters. To apply this to a camera a proportional sum is used:—As 10 : the camera length : : microscope amplication : camera amplification. Example: Using a 1/8th inch objective, eye-piece magnifying three times, and camera extension of 24 inches, required the magnification—

As 10 : 24 : : 240 : x = 576 diameters.

If the objective alone is used, then the length of the tube must be added. A 1/8th inch on a 10 inch tube and camera extension of 24 inches will give us:—

As 10 : 24+10 : : 80 : x = 272 diameters. This shows clearly the advantage to be gained by using an eye-piece.

These are but rough and ready rules; for very exact work it is essential that a stage micrometer should be used, and the enlarged image divided by the real measure gives the magnification. For instance, with a 1/8th inch two divisions of a 1/100th inch micrometer scale were found under the above conditions to measure 2 inches, therefore, 2 inches ÷ 2/100 = 100 amplification; this is, of course, purely a hypothetical example.

We have mentioned English tube lengths and Continental tube lengths. It is an unfortunate fact that English and American opticians have adopted ten inches (= 255 millimetres), as the tube length for which their objectives are corrected, whilst Continental opticians have adopted from 160 to 180 Mm. as their tube length, with the result that it is essential to know for what tube length the objective is calculated, and always to work it at that length, otherwise the corrections are not perfect.

(To be continued.)

THE SMATTERER IN PHARMACY.

BY WILLIAM B. THOMPSON.

The dictionary defines a "smattering fellow" as one who does nothing thoroughly. We meet with many types of this class, in our daily observations, and we notice that trades and occupations and arts are much afflicted with the genus. In many cases "botchy" work does and will pass by escaping a close, rather than a critical inspection; but in any and all labour and skill which demand thoroughness this individual is never "in it" with credit. This fact is more especially true of an occupation which is conspicuously prominent in painstaking care, in accuracy, in nicety, and in exactness of detail, such as is that of pharmacy. All these general attributes of habit constitute so important a part of the daily practice, that they can hardly be said to be even secondary or subordinate to the prime essentials of education, *i.e.*, knowledge and skill. The character and individuality of a man is always clearly discerned in his work, and this, while it may fail to elicit the expressed commendation of some, does not fail of being observed by others. For an instance, let us take that bottle of medicine which is to be found in every household in the land—whether it be the special prescription or some familiar domestic remedy—it should come to the hands of the sick bearing all the external evidences, not only of responsible authenticity, but an absolute correctness in the individual work and care which prepared it. This is the education of which we have spoken, and which the "smatterer" never has, and can, therefore, never exercise. Let us criticise this bottle yet further. The sensible property of the contents, not being positive, may be obscure to us, but we will assume that it is a correct compound. First, observe the cork; is it well adapted? size just what it should be? has some regard been paid to its quality, and to the fact that its use will be extended for some time? or has an attempt been made to utilise one too large, or too small, with a result that is likely to provoke both patience and patient? Note next the general neatness, trimming and superscription on the label; is the handwriting what it should especially be—clear, distinct, perspicuous, filling the allotted blank space with lines shapely written? Is there no bad English in it, and possibly no bad grammar? Is date and numerical notation distinct? Now, as to the bottle itself, is the surface cleanly and all cracks and abrasions carefully avoided?

This simple illustration of the detail which pertains to the duty of the exact as well as the careless man, may appear to some of your readers trifling, and in others excite but a derisive smile; but instances abound to prove that little things are equally the stamps of character, and that attention to these has led to business fame and fortune. If a high standard of accuracy becomes an habitual practice, then, indeed, we have an apothecary worthy of the name—the fame will assuredly follow. This is the education of which we speak, and which the "smatterer," not possessing, can never exercise. It belongs wholly and exclusively to the practice and experience of good systematic shop-teaching. It can never be acquired under any college instruction. It is vain, delusive,

and deceptive to expect it or promise it. We have only casually referred to the prime essentials of the apothecary's education; namely, that of its comprehensive and varied character, with skill and art in a high degree, which can be attained only by the experience and study of years. A good foundation for it, however, must be laid in youth. The man of science ought, perforce, to be a man of liberal education. The apothecary of fact ought to be as well informed as the apothecary of fiction. For we are told of a certain apothecary in fiction whose education was the means of his fortune and his preferment. Thackeray introduces the hero of his novel, John Pendennis, as the little apothecary who, although he sold a pennyworth of salts and a cake of fragrant Windsor soap to the casual customer, as well as brown paper plaster to the farmer's wife, yet was a gentleman of good education, gaining the esteem of all his patrons, and the confidence of the wealthy and influential. This man ultimately, according to the well-told story, became very comfortable in his circumstances, if not actually rich—*nous verrons!—Alumni Report.*

REVIEWS AND NOTICES OF BOOKS.

When sending books for review or notice, publishers are requested to give full particulars as to price, etc.]

DENTISTRY FOR MEDICAL SIUDENTS.

ON EXTRACTION, with Notes on the Anatomy and Physiology of the Teeth. For medical students. Pp. 96. By W. D. WOODBURN, L.D.S., Dental Surgeon to the Western Infirmary, Glasgow. London: Ballière, Tindall, and Cox, 20 and 21, King William Street, Strand.

These notes are put forward by the author to teach medical students how to extract teeth, and he claims that what he has written on this subject is the outcome of his own experience. More than half the book is devoted to dental anatomy and physiology, being for the most part a reprint, with illustrations, from some American works. Some excellent original illustrations explain the various positions most suitable for the operator in extracting the various teeth, and much that is written describes the best mode of procedure, but the position recommended on page 70 for the operator to stand on the left side of the patient when extracting lower right bicuspids or molars cannot for convenience be compared with more modern position of standing behind to the right of the patient, having the patient as low as possible, especially in using the "Hawk's Bill" forceps as recommended. To use a pair of straight forceps for lower right canines, page 74, with the operator on the left side of the patient, must be most awkward, as well as endangering the enamel edge of the upper teeth—far greater use can be made of the fingers of the left hand in protecting the surrounding soft tissues than described by the author. In speaking of the elevator, no warning is given of the danger of using it to the upper wisdom teeth, nor does the book contain any description or advice about the many complications that may, and do, arise from tooth extraction, or those difficult cases of extraction which every one meets with more or less, even medical students, who will find that the operation of extracting teeth is even to the most expert somewhat more difficult than the author is pleased to admit. The book does not contain anything that cannot be found more fully dealt with in other well-known works, but is well got up as regards binding, printing, illustrations, etc.

WORK OF THE GREAT LONDON HOSPITALS.

SAINT BARTHOLOMEW'S HOSPITAL REPORTS. Edited by SAMUEL WEST, M.D., and W. J. WALSHAM, F.R.C.S. Vol. xxxi. 1895. London: Smith, Elder, and Co.

SAINT THOMAS'S HOSPITAL REPORTS. Edited by Dr. T. D ACLAND and Mr. BERNARD PITTS. Vol. xxiii. New series, 1896. London: J. and A. Churchill.

KING'S COLLEGE HOSPITAL REPORTS. Edited by NESTOR TIRARD, M.D.; W. WATSON CHEYNE, F.R.C.S.; JOHN PHILLIPS, M.D.; and W. D. HALLIBURTON, M.D. Vol. ii. 1894-5. London: Adlard and Son.

These three annual volumes record a year's work done in the great institutions to which they relate. St. Bartholomew's Hospital and St. Thomas's have each to record the loss of a senior member of the staff. The memorial notice of Sir Wm. Savory, great alike as a surgeon and as an orator, is written by one of his colleagues at St. Bartholomew's, Mr. Howard Marsh; whilst Dr. Payne records the life and labours of the late Dr. J. S. Bristowe, who for thirty-eight years was actively engaged as physician to St. Thomas's Hospital, and who made for himself a world-wide reputation as a pathologist and a physician.

All three volumes contain statistical records of the year's work in the several departments of the hospitals, and detailed accounts of interesting cases, by the records of which the value of these publications to the medical world at large is to be measured. A few instances will suffice to show that in these volumes is to be found much of the best work that is done at the great London hospitals. Dr. A. A. Kanthack and Mr. C. P. White publish the results of bacteriological investigations in diphtheria pursued at Saint Batholomew's Hospital. The axiom is laid down that at the present time every case of tonsillitis, laryngitis, or sore throat in which the diphtheria bacillus is found must be regarded as a case of true diphtheria. In a certain number of cases what appeared to be true diphtheria, the bacillus proved to be missing and among these cases it is interesting to note that a certain proportion turned out to be not diphtheria, but scarlet fever. In some cases typhoid fever was combined with diphtheria.

The Klebs-Löffler bacilli were found in nearly every case to be associated with strepto-cocci, and with the bacillus of the colon. The authors could not establish any real difference of virulence between the short and the long varieties, and they found that by artificial cultivation one form could be made to change into the other. The persistence of the diphtheria bacteria in the throat after the disease has apparently been cured under serum treatment is well known, and the authors found living bacteria four weeks after the disappearance of membrane. This is an argument in favour of the thorough application of local antiseptics, as previously taught by clinical observers on purely practical grounds.

In some cases which were clinically not diphtheria, bacilli hardly to be distinguished from the Klebs-Löffler were found. "Microscopically, and often also on artificial cultivation, the bacilli separated from these cases were indistinguishable from typical diphtheria bacilli, and animal experiments unfortunately were not made." The authors state among the concluding paragraphs that: "It requires much more work and more extended observation before the final word as to the real significance of the Klebs-Löffler bacillus can be spoken."

Among the many notable papers contained in the volume of reports of St. Thomas's Hospital may be mentioned one by Dr. Acland and Mr. Ballance, on "cerebellar abscess secondary to ear disease." The

record of this case is a model of clinical description. Perhaps its chief interest lies in the fact that the authors point out certain features which will assist in establishing rules for differentiating between abscess in the temporo-sphenoidal lobe of the brain on the one hand and cerebellar abscess on the other. The case was brought to a successful issue, and affords another instance of the high degree of perfection to which the surgery of the brain has been brought within the last twenty years.

Local anæsthesia in late years has attained a position of well-deserved prominence, and hence a brief note by Mr. C. E. Wallis, in the 'Reports of King's College Hospital,' is deserving of notice. It refers to a mixture of the chlorides of ethyl and methyl. This mixture is termed "coryl." Ethyl chloride has, to a large extent, replaced the ether spray as a local anæsthetic. The advantage claimed for coryl is that it produces anæsthesia in from twenty seconds to half a minute, whilst ethyl chloride usually takes three or four minutes or sometimes longer. If the metal cylinder in which the coryl is stored is placed in warm water before the spray is allowed to escape, the production of anæsthesia is said to be instantaneous. The difference in rapidity of freezing observed in the action of the two substances depends on the fact that coryl volatilises at a temperature of 0° C., whilst ethyl chloride requires a temperature of 10° C. Owing to the rapid divergence of the spray as it leaves the coryleur, it is said to be extremely difficult to limit the anæsthesia to a small area, such as is required for dental work.

MODERN VIEWS ON THE CARBOHYDRATES.

THE PHYSIOLOGY OF THE CARBOHYDRATES: AN EPICRITICISM. By F. W. PAVY, M.D., F.R.S. Pp. 141. London: J. and A. Churchill. 1896.

The place of the carbohydrates in nature is of the first importance. This is realised when one reflects that starch, cane-sugar, and grape-sugar are the typical examples of the three groups into which the carbohydrates are subdivided in chemical classification. There is, perhaps, no more fascinating book dealing with a province of physiological chemistry than that published by Dr. Pavy in 1894 under the title given above. The work constitutes a rich mine of careful observation, and also contains a new and reinforced expression of the author's views of the so-called glycogenic function of the liver.

In order to apprehend the present position of this important physiological question, it is necessary to recall the orthodox doctrine with which Dr. Pavy's conclusions are in disaccord. The accepted views date from 1857, in which year Claude Bernard discovered glycogen (the so called "animal starch") in the liver. The same observer had discovered grape-sugar in the liver and portal vein nine years previously. Subsequently Pavy showed that during life the blood of the hepatic veins does not contain more sugar, bulk for bulk, than does the blood of the general circulation, and, farther, that the liver itself contains no appreciable amount of sugar if the organ is rapidly frozen before post-mortem changes have taken place. The interpretation put by Bernard upon the facts he observed constitutes the theory now generally accepted by physiologists, and may be briefly expressed as follows:—Carbohydrate material is absorbed from the intestine in the form of grape-sugar, passes into the liver by the ramifications of the portal vein, and is there seized on and arrested by the liver-cells, which reduce it to the less diffusible glycogen; the liver-cells hold, and give out in a quasi-intelligent manner under the governance of the nervous system this carbohydrate, re-transformed into sugar by the action of a ferment of the blood, to supply the varying wants of the rest of the body. Applied to explain the occurrence of glycosuria, which marks the important disease diabetes, this theory assumes that the control of this process is disturbed; this view is supported by the fact that when an experimental puncture is made in the floor of the fourth ventricle of the brain glycosuria ensues. The fact that the blood of the hepatic veins does not contain more sugar relatively than that of the rest of the circulation is an obvious difficulty, which is met by the hypothesis that the amount of sugar given out as an internal secretion (to use Professor Schäfer's term) within the short time allowed by the circumstances of experimentation is so small as to fall within errors of experiment. In order to grasp the nature of the questions at issue, it must be remembered that this form of internal hepatic secretion alleged by the glycogenic theory to exist is quite independent of its external secretion, viz., bile.

In opposition to Bernard's theory, Pavy maintains that glycogen is not specially a liver product, but seeing that it is found in nearly all the tissues of the body, and often in as large amount as in an equal weight of liver, the question of glycogenic function cannot be limited to the liver. In one point only Pavy's theory is in accord with that of Bernard; it recognises that the liver arrests carbohydrate material. This is made evident by the fact that after a meal rich in carbohydrates the blood of the portal vein, *i.e.*, blood passing from the stomach and intestines to circulate in the capillaries of the liver, contains five times as much sugar (5–1000) as the blood of the hepatic veins, *i.e.*, the blood leaving the liver to be poured into the heart. But Pavy maintains that the carbohydrate thus abstracted goes to be assimilated by the liver cells after being first reduced to the state of glycogen. Diabetes, according to Pavy consists not in the excessive and unrestrained conversion of glycogen to sugar, but in the defective power of metabolism of the liver cells not allowing of their assimilating the proper proportion of sugar brought to them by the portal vein. In severe cases of diabetes the patients may have glycosuria, even when restricted to a proteid diet. This fact Pavy regards as explained by his original and interesting discovery to the effect that proteid matter is of the nature of a glucoside. Pavy's view of the fate of the carbohydrate material, which reaches first the epithelial cells of the stomach and intestine, second the cells of the liver, and finally those of the tissues generally, is divided into three stages—

1. Transmutation into glycogen.
2. Application to the production of proteid.
3. Transformation into fat.

Dr. Pavy's renewed expression of his dissent from Bernard's theory has the support of new experimental evidence and matured thought. No wonder it has brought out an advocate of the orthodox teaching. Dr. Noël Paton in the *Edinburgh Medical Journal* in 1894, began the criticism of Dr. Pavy's work; the rejoinder or epicriticism from Dr. Pavy appeared subsequently, and whilst frankly detailing the results of the author's re-examination of certain weak points indicated by Dr. Paton strenuously re-asserts the position assumed in the 'Physiology of the Carbohydrates.' The controversy is still being continued, and much good must come of it in the shape of a wider knowledge of the various points at issue. At the present moment no more can be said than that Dr. Pavy has effectually defended his view of the glucoside nature of proteid, and has generally made it incumbent on his able adversary to reconsider his criticism, and on physiologists generally to re-examine the data on which Bernard's theory is founded.

PARLIAMENTARY NOTES AND NEWS.

The Companies Bill Select Committee.—The examination of the President of the Incorporated Law Society was continued at the meeting of the Committee on June 26, when the witness gave expression to his views on "statutory meetings" and "shareholders' balance sheets." Incidentally, too, he contributed certain opinions which induce reflection. Replying to the Lord Chancellor, Mr. Budd said he had no objection in principle to "one-man" companies, provided they were not formed with the object of defrauding creditors. He also assented to a leading question put by the Earl of Kimberley—a question which is not only of inherent interest to chemists, but is so obviously indicative of the noble Earl's cast of thought that we give it verbatim. "The public interest," said the ex Secretary of State for Foreign Affairs, "is that companies should be freely formed, and no impediments thrown in the way of their trading, is it not?" "I think so," was the reply. One feels instinctively urged to inquire how the public interest is likely to be served by the unhampered formation of such companies as those given in the list compiled by the Pharmaceutical Society, and published in the Departmental Report of the Board of Trade Committee.

Mr. H. C. Bonsor, M.P. for the Wimbledon Division of Surrey, and a Director of the Bank of England, was also examined last Friday, and he, too, did not see anything in the "one-man" company to warrant his disapproval. The reason for this sympathetic attitude may be given in Mr. Bonsor's own words. "If a director puts a large stake in his company, it is a security to the public that he believes in it." Logically, upon that argument, the fictitious holding of a "dummy" director in a non-existent gold mine ought to be regarded as a first-class security.

When Experts Disagree!—The Committee of the House of Commons now taking evidence bearing on the use, sale, and storage of petroleum will have difficulty in formulating recommendations if it is solely dependent for guidance upon the testimony placed before it. The opinions of two such eminent men as Sir Henry Roscoe and Professor Dewar on physico-chemical matters are naturally of the very highest value, and when their views coincide the united testimony is unassailable. But they do not agree on the question of the legal "flashing point" which should be fixed for petroleum, and the Committee of Inquiry must be duly embarrassed in consequence. Sir Henry is reported to have said that there is "absolutely no safe petroleum lamp yet manufactured, and there is nothing to be done in order to prevent lamp accidents but to increase the flashing point of the oil." This he suggested should be raised to 100° or 105°. "No such thing," says Professor Dewar in effect. Proportionately to the oil consumed the number of accidents is exceedingly small, and the alteration in the flashing point from 73° to 100° would make very little difference in the risk of accident with the lamps at present in use. In fact, the professor sees no necessity for raising the flashing point, which, in addition to being practically useless, would have a serious effect on the cost of oil. What is wanted is, apparently, an improved form of lamp, and no one should be more competent to suggest such improvements than the Fullerian Professor of Chemistry and his distinguished brother in science.

Importation of Cocoa.—Sir Howard Vincent is always keenly alive to the anomalies of free trade, and always ready to protect the British manufacturer from unfair foreign competition, but he gets little encouragement from official utterances as a rule. On the 25th ult. he pointed out to the Chancellor of the Exchequer that it had been proved, from enquiries instituted by the Secretary to the Treasury, that considerable quantities of a dutiable article—viz., cocoa—were being imported duty free in the form of "cocoa-butter," to the great detriment of the Revenue as well as to British trade; and he asked for some amendment in the Finance Bill which would place British and foreign traders on the same footing. The Chancellor of the Exchequer, in his reply, agreed that such an amendment might be made, but, after all, the matter affected so few persons and such a small amount of revenue, that he feared any new arrangement made would involve an expenditure of time disproportionate to the importance of the point at issue.

Educational Measures Languish.—The Education Bill has been abandoned by the Government, the Teaching University for London gives little promise of emerging just yet from the nebulous stage, and now Sir John Gorst has had to confess to the House that he sees no prospect of being able to proceed with the Teachers Registration Bill this session. The reason, according to official views, lies in the wilful obstruction of the Opposition, but the "Outs" attribute it to an overloaded Government programme. The truth may be somewhere between these two views.

London Teaching University.—Parliamentary questions, like history, not infrequently repeat themselves. Some six or seven weeks ago Sir Albert Rollit elicited from Sir John Gorst that a Bill for the reorganisation of the London University on the lines recommended by the Gresham Commission was in the pigeon-holes of the Privy Council Office, and would in due course be introduced into the House of Lords. On Monday last Mr. Bryce asked a question on the same subject, couched in terms similar to those used by Sir Albert, and he received from Mr. Balfour a precisely similar answer.

The Select Committee on Adulteration met on the 1st instant, and is reported by the *Times* to have made further progress with the Chairman's draft report. The Committee is represented to have recommended, or, at any rate, decided to recommend, a very important alteration in the procedure relating to adulteration. In fact, the suggestions of witnesses as to the establishment of a Board of Reference to which all questions as to standands and cognate matters should be relegated, have been practically adopted. The Board is to be nominated by the Board of Trade and is to comprise representatives of the Medical Council, the Institute of Chemistry, the Pharmaceutical Society of Great Britain, the Local Government Board, analysts of repute and certain commercial and trading interests. The principal officer of the Government Laboratory, Somerset House, will be a sort of *ex-officio* member of the Board of Reference. We hope to be able to give fuller details of the report later on, but the information now given is sufficiently encouraging to those who have had occasion to deplore the present unsatisfactory condition of the law dealing with adulteration.

KENTUCKY PHARMACEUTICAL ASSOCIATION.

The nineteenth annual meeting of the Kentucky Pharmaceutical Association was held at Estill Springs, Irvine, Ky., June 16 to 19, inclusive. The meeting was eminently successful in every way; some seventy-five members, many with their wives, were present, and all actively participated in all the exercises.

Eighteen new members were elected.

The legislative committee was instructed to draft an entirely new pharmacy law to be presented to the next annual meeting for ratification. It was generally agreed that it would be no more difficult to pass an entirely new law than to pass the needed amendments to the old one.

The "Atchison Plan," as presented by the Kansas Pharmaceutical Association at its last annual meeting, was brought to the attention of the Association, and the protests against the sale of those patent medicines and proprietary articles which do not yield the retailer a gross profit of at least 50 per cent. were heartily concurred in.

Professor G. L. Curry's paper "Bacteriology for the Pharmacist" was awarded the Association prize of $10.00 for the best scientific paper, and the paper entitled "The Retail Pharmacist" by the same author was awarded a similar prize for the best commercial paper presented.

The action of the last meeting making the directors and faculty of the Louisville College of Pharmacy ineligible for membership of the State Board of Pharmacy, was, after a spirited discussion, rescinded.

The following officers were elected for the ensuing year:—

President, R. M. McFarland, Henderson.
1st Vice-President, J. C. Hearne, Lexington.
2nd ,, ,, F. C. Keener, Newport.
3rd ,, ,, Dr. J. S. Leech, Glasgow.
Secretary, J. W. Gayle, Frankfort.
Treasurer, Chas. G. Morris, 28th and Dumesnil Sts.; Louisville.
Local Secretary, A. R. Johnson, Henderson.
Chairman Executive Committee, C. Troxler, Jr., 3rd and Breckenridge Sts., Louisville.

Place of next meeting will either be Cerulian Springs or Crittenden Springs, to be decided by the Executive Committee.

PHARMACEUTICAL JOURNAL.

A Weekly Record of Pharmacy and Allied Sciences.

ESTABLISHED 1841.

Circulating in the United Kingdom, France, Germany, Austria, Italy, Russia, Switzerland, Canada, the United States, South America, India, Australasia, South Africa, etc.

Editorial Office: 17, BLOOMSBURY SQUARE, W.C.

Publishing and Advertising Office: 5, SERLE STREET, W.C.

LONDON: SATURDAY, JULY 4, 1896.

SUMMARY.

Mr. Michael Carteighe has been presented with an address by his fellow Councillors (p. 16).

Dr. J. Norman Collie, F.R.S., has been appointed Professor of Chemistry in the Society's School of Pharmacy (p. 16).

The Conference at Liverpool is to be attended by fourteen pharmaceutical Councillors as delegates (p. 15).

Mr. H. A. D. Jowett has been elected a Research Fellow of the Pharmaceutical Society (p. 15).

Pilocarpine Nitrate appears to require more precise definition, according to Paul and Cownley (p. 1).

A Spurious Maranham Jaborandi recently placed on the market is described by Mr. E. M. Holmes (p. 2).

Cream of Tartar is the subject of Mr. A. H. Allen's latest paper (p. 3).

Photo-Micrography is the subject of a specially contributed practical article, which has been promised some time (p. 5).

A New School of Pharmacy has been established at Liverpool in connection with University College (p. 13).

Acetanilide, in headache powders prepared by a firm of unregistered persons, has caused a death at Howden, Yorks (pp. 14, 18).

The Select Committee on Adulteration will recommend the establishment of a Board of Reference (p. 10).

The Kentucky Pharmaceutical Association has held a successful annual meeting, according to the official report (p. 10).

EDITORIAL.

THE COUNCIL MEETING.

The business proceedings of the Council last Wednesday were characterised by exceptional brevity, as will appear from the report at page 14. After the reading of a letter from Professor Attfield, the election of two members, six associates, and eight students, the reports of the Finance, Benevolent Fund, and Library Committees were adopted, and three grants amounting in the aggregate to thirty pounds were ordered to be paid.

The official report of the results of the election of members of the Executive of the North British Branch was then read.

Mr. Carteighe formally handed over to the President the deed of trust relating to the Burroughs Memorial Fund, stating at the same time that Messrs. Flux, Thompson, and Flux had done the legal work in connection with its execution free of charge.

The President reported that the Research Committee recommended the election of Mr. H. A. D. Jowett as a Research Fellow of the Society, and his motion to that effect, seconded by Mr. Carteighe, was carried.

Mr. Martindale in moving the appointment of delegates to the meeting of the British Pharmaceutical Conference at Liverpool, spoke of his pleasant recollections of the meeting held there in 1870 as leaving no doubt that an equally hearty welcome would be met with on this occasion. Mr. Symes, in seconding the motion, spoke of some details of the programme which has been arranged and expressed his hope that the local promoters would be well supported by a large attendance, of which ladies would form an important part.

The motion was carried and, in putting it, the President said he also hoped Mr. Martindale would be thoroughly well supported as President of the Conference.

After the legal portion of the report of the General Purposes Committee had been considered, resolutions were passed authorising various legal proceedings recommended by the Committee.

The President then moved that, in accordance with the recommendation of the General Purposes Committee, Dr. J. Norman Collie, Ph.D., F.R.S., should be appointed Professor of Chemistry in the Society's School. He mentioned that, among the sixteen applicants for the appointment, there were several men of considerable scientific eminence and that the selection of Dr. Collie was the result of much consideration given to the difficult task of deciding which was the right man. The motion was seconded by Mr. Bateson, and carried unanimously.

Other matters relating to the re-adjustment of the Society's School were left, until after further consideration, a complete scheme could be reported to the Council.

PRESENTATION OF AN ADDRESS TO MR. CARTEIGHE.

After the conclusion of the ordinary business of the Council, the President intimated that there was another transaction, to take part in which he had been empowered

to invite Mr. SCHACHT and Mr. WARREN. As PRESIDENT of the Society the pleasing duty devolved upon him, on behalf of the present and past Council, to ask Mr. CARTEIGHE'S acceptance of an address, the object of which would be best conveyed in its own words, and he then proceeded to read the address, printed at page 16, recording the desire to mark the retirement of Mr. CARTEIGHE from the Presidential Chair, by a cordial expression of the esteem, friendship and goodwill of his colleagues. To this document, suitably illuminated, was appended the signatures of the President, Vice-President, Treasurer, and present members of Council, as well as those of Mr. SCHACHT, Mr. WARREN, and Mr. RICHARD BREMRIDGE, the Registrar. As a further indication of the reasons underlying the presentation of this document, it was addressed "to MICHAEL CARTEIGHE, for the past fourteen years President of the Pharmaceutical Society, a loyal, disinterested, and distinguished advocate of pharmaceutical progress and of the best interests of the Society."

In brevity and simplicity this address could not well have been surpassed and, on that account alone, it may readily be understood that the PRESIDENT, in asking Mr. CARTEIGHE to accept it as an expression of thanks for his past services and admiration of the disinterested loyalty with which he has worked for pharmaceutical interests, should have felt that it would be appropriate to add some further remarks. In doing so he very happily referred to the axiom that "every man is a debtor to his own calling." His statement that probably no one has discharged that obligation with greater zeal and more self-denying devotion than Mr. CARTEIGHE—from the time when he won the blue riband of pharmaceutical distinction as a student—is not only amply borne out by the records of his labours which are to be found in the pages of this Journal for the past thirty years, but we feel sure it will be gratefully acknowledged by everyone conversant with the pharmaceutical history of that period.

Not less fitting was the reference made by Mr. HILLS to the personal characteristics by which Mr. CARTEIGHE has won confidence and esteem from those he has been associated with on friendly terms and even from those inclined to regard him with suspicion and and hostility. Not the least of the services he has rendered to the Pharmaceutical Society was the reconciliation effected with its Scottish members, which has now developed into perfectly harmonious co-operation. No higher compliment could have been paid to him in that respect than was conveyed by the remarks made on this subject by Mr. LAIDLAW EWING in his address at the meeting of the North British Branch reported in last week's *Pharmaceutical Journal*.

It would be fulsome to attempt to supplement by laudatory details the graceful and unaffected terms in which Mr. HILLS discharged the duty of expressing to Mr. CARTEIGHE the appreciation and affectionate regard entertained for him by his colleagues, but as it was his desire that a knowledge of the fact should be conveyed to those who have not had the opportunity of personal association with Mr. CARTEIGHE, we gladly take advantage of the opportunity to call attention to these proceedings, feeling confident that throughout the country there are many who will be delighted to hear what took place after the Council meeting, many who will heartily re-echo the sentiments expressed by the PRESIDENT on Wednesday.

ANNOTATIONS.

VANILLA IN TAHITI.—Owing to the failure of the Bourbon and Mexican vanilla crops, a marked improvement was shown in the export of that article from Tahiti in 1895, a much greater quantity being exported than during preceding years, whilst the price obtainable early in the year was more than doubled by November. The following figures, showing the exports for three years, are taken from the British Consular Report for 1895:—

1893.		1894.		1895.	
Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
29,858 lbs..	£3938	31,370 lbs..	£3900	50,628 lbs..	£7209

The increase during 1895, as compared with 1894, was thus 19,258 lbs., valued at £3309. As a result of this an impetus has been given to the vanilla industry in Tahiti, and the natives and others are said to be devoting special attention to the cultivation of the plant and to the subsequent curing of the bean.

MUSTARD OIL AS A POISON IN TRINIDAD.—The use of mustard oil as a poison is novel, but is mentioned in the report for 1895 of the Government Analyst at Port of Spain, Trinidad. The ordinary fixed oil has been used and seven-eighths of an ounce was found in the stomach of the deceased person, the inner coat of the organ being much wrinkled and covered with bright pink spots on a nearly white background. It was stated that the oil had been taken mixed with opium for medicinal purposes, but no traces of opium were found in the stomach or in the unconsumed portion of the oil. Other poisons and irritant substances used during the year in Trinidad, with fatal effect, were carbolic acid (suicide), powdered glass (in food), opium (accidental), daturine or atropine (in bread), sugar of lead (in rum), sulphuric acid, and arsenic.

NEW TESTS FOR ESSENTIAL OILS.—The usual methods adopted for detecting sophistication in essential oils, including chemical analysis and the determination of physical data, are considered by Mr. Martin Perls to be unreliable, and in a recently-published pamphlet he explains the details of a system which is claimed to be simple, reliable, and methodical. The new system is based upon the plan of never examining an essential oil alone, but always comparing it with other oils of the same description. Narrow slips of glazed paper of equal size are dipped into the oils to be compared, the excess of liquid is shaken off by a quick movement of the hand, and the slips are then exposed to the air for a fixed time. Oils in Class A (lemon and orange) are exposed for 15 minutes; B (caraway, bergamot, and spike), 2–4 hours; C (lavender and thyme) 12–15 hours; D (cloves, geranium, and rose), 24 hours; and E (sandalwood and patchouly), 48 hours. Finally, the oily parts of the strips are trimmed with scissors to equal size, marked, to facilitate identification, and pinned on a board so as to hang free, after which the odours should be compared, near an open window, in a room absolutely free from smell. One and the same nostril should be regularly used for smelling the slips, which are to be placed in succession firmly against it, and air drawn in by deep aspiration.

PRODUCTION OF CAOUTCHOUC IN BRAZIL.—We are indebted to Mr. D. Morris, the Assistant Director of the Royal Gardens, Kew, for having pointed out an error in the statement published by the *Bulletin Commercial* as to the value of the caoutchouc exported from the State of Para in 1894-95, and quoted in the Journal of the 6th ult. (p. 453). A recently-issued report to the Foreign Office by Her Majesty's Chargé d'Affaires at Rio Janeiro enables us to give the correct value as 37,447,374 milreis, the milreis being, at the current rate of exchange, equivalent to 11¾d.

DR. AUGUSTINE HENRY, who is a Corresponding Member of the Pharmaceutical Society, and has already done so much in investigating the flora of China in the neighbourhood of Ichang, has recently started for Yünnan. His knowledge of the medicinal products used by the Chinese, many of which come from Yünnan, will doubtless enable him to throw considerable light on the botanical source of some of the native drugs. A number of new plants may also reasonably be expected to fall to the lot of so enthusiastic and painstaking a botanist.

THE RÖNTGEN RAYS AS A DETECTOR OF ADULTERANTS.—W. Arnold, of Ausbach-Erlangen, has tried whether *x*-rays could be used to detect impurities in foodstuffs and other substances, and he points out that although carbohydrates, fats, and aniline colours are transparent to the rays, yet small differences are to be detected, and the vegetable oils can thus be classified as follows :—1, castor; 2, almond; 3, olive; 4, poppy; 5, sesame; 6, cottonseed, and whilst the difference between 2 and 5 is scarcely noticeable, castor oil was considerably more transparent than the others. Butter was the least transparent of the fats, then lard, the most transparent being margarine. Mixtures of various fats in different proportions also behaved differently as regards the *x*-rays. With vegetable matter it was found that the transparency decreased with the increase of ash, and saffron absorbed the least, but pepper the most rays. Adulterations of spices with earths, ochre, sand, etc., or of flour with chalk, fluor-spar, or heavy spar were clearly recognisable. Gelatin stained with aniline dyes could be arranged in the following order: 1, methylene blue; 2, cyanine; 3, methyl violet; 4, eosine; 5, fuchsine; 6, mode brown; 7, orange; 8, chrysaniline; 9, fluorescine, so that the brightest colours are the least transparent. With wines the transparency decreased with the increase in the amount of sugar. With all liquids the absorptive power increased with the specific gravity; in the case of the elements with the atomic weight. The acid radicals had considerable influence on salts and arseniates; sulphates and phosphate show much greater absorption than chlorides.

NEW SCHOOL OF PHARMACY AT LIVERPOOL.—The arrangements in connection with the classes for pharmacy students at University College, Liverpool, are now about complete. The first session will begin in October next, the academic year lasting until July following. Students must have passed the Preliminary examination of the Pharmaceutical Society or its equivalent before admission. After attending the junior course of instruction in each subject, commencing in October, it is expected that they will be prepared to pass the Minor or qualifying examination in April. The senior or Major course may next be taken and the idea is that the Major examination can then be passed in July. It will more probably be found, however, exceptional in both cases, rather than the rule, for candidates to be ready by the periods mentioned. Experience proves that six months is scarcely enough time to prepare for the Minor examination: three months or less is certainly insufficient for dealing satisfactorily with the work outlined in the Major syllabus. For the sake of those students who wish to cover the ground thoroughly, a Major course ought to begin at the same time as the Minor course in October and continue until April at least, whilst, if necessary, a similar course might commence early in April for the sake of those intending to enter for examination in October, directly after the vacation. The fact of the matter is that the plan of having two consecutive courses does not harmonise well with the arrangements of the academic year. Since would-be pharmaceutical chemists must, sooner or later, face the necessity of studying during a period of two years, it might be as well to face the difficulty at once by having longer and concurrent junior and senior courses.

A PHOTOGRAPHIC OUTFIT FOR SIXPENCE.—According to the *Amateur Photographer*, a capital pinhole camera, capable of turning out good work, can be made for less than sixpence. A cloth-covered, light-tight cardboard dry-plate box, provided with metal grooves, serves as the camera, and a neat hole about half-an-inch in diameter (or less) must be cut through the centre of one side of this so that it will be opposite a plate placed in the grooves. If desired, a piece of wood, bored with a hole to accommodate a tripod screw, may be glued to the bottom of the box for attaching the camera to a tripod or other support during exposure, but this is not absolutely necessary. A small piece of blackened tin, large enough to completely cover the hole in the box, must then be drilled with a small hole (with an ordinary bradawl), and the edges of the hole smoothed with a file. This hole is next covered with a piece of tin-foil, glued on with fish glue, and when dry is ready for the pinhole, which must be made with extreme care, as the slightest roughness of edge is fatal to success. The best plan is to support the tin in a horizontal position, and pass a very fine red-hot needle through the centre of the foil. The piece of tin and tin-foil may then be glued on the inside of the box over the hole made for it. The outside of the hole should be provided with a cloth-covered cardboard flap, lined with velvet, attached to the box by means of a strip of bookbinder's cloth glued along the bottom, a little catch being attached above the hole to retain the flap over it prior to exposure. The plate to be exposed is put in one of the pairs of grooves farthest from the pinhole, it being borne in mind that the nearer the plate approaches the pinhole the more view will be included on it, and that the time of exposure is increased the farther the plate is removed from the pinhole. A trial exposure out of doors on a sunny day will prove the best guide as to the necessary time, but the first exposure on an "ordinary" plate should be about one minute.

CHINESE OPIUM.—Additional confirmation of the conclusions indicated in last week's Journal (p. 512), with regard to the opium trade in China, is afforded by the British Consular report on the trade of Shanghai for 1895. The importation of Indian opium at that port has fallen off to the extent of 4000 chests (=about 600,000 lbs.) as compared with the previous year, and it is thus shown more clearly than ever that "the burning opium question will soon solve itself, and the trade, which so many wish to see ended by violent means, is likely to disappear by a sort of painless extinction." So says Consul Jameson, in commenting on the fact that every year sees a smaller and smaller import of the foreign drug. The following figures show the imports of opium for the past two years :—

Kind of Opium.	1894.		1895.	
	Quantity.	Value.	Quantity.	Value.
Indian, Persian, etc.	4,721,024 lbs.	£3,074,280*	4,163,152 lbs.	£2,896,308
Native	673,792 lbs.	£259,860*	1,388,240 lbs.	£508,815
Total..	5,394,816 lbs.	£3,334,140*	5,551,392 lbs.	£3,405,123

* For the sake of comparison the exchange value of the Haikwan tael is here reckoned the same as in 1895=3*s.* 3½*d.*

These figures prove, in the first place, that the importation of foreign opium has fallen off to the extent of more that 11 per cent., and, secondly, that the quantity of opium used in the Shanghai district has not diminished, the deficiency being more than made up by the extra importation of the native drug from Western China —Szechuen and Yünnan. It is also stated as a noteworthy fact that some of this same native opium has been exported from Shanghai to foreign parts, presumably Hong Kong or Singapore.

UNFAIR TRADING.—The dread of interfering with trade has hitherto been a prevailing influence in British legislation, but the effects produced by unlimited competition with limitation of liability have been found in Germany to require correction. With that object a law has been passed, which came into operation on the first of this month. It is intended to afford tradesmen means of protecting themselves against practices of their business rivals which they may consider to be unfair, and by its provisions power is given to institute civil proceedings to obtain either an injunction against obnoxious practices, indemnity for damage caused by them, or punishment of the offender. Unfair competition within the meaning of the law includes the publication of advertisements containing incorrect descriptions of goods, and the utterance of commercial libel or slander. Newspapers printing inexact advertisements will also come within the scope of this measure. Obviously wide opportunity will thus be afforded for litigation, but whether the interests of legitimate trade are likely to be promoted by that means seems more than problematical.

"DAISY" HEADACHE POWDERS.—The danger attending the indiscriminate use of synthetic remedies, especially when they are not properly dispensed by registered chemists and druggists, has been exemplified in a case at Howden, Yorks, a young woman having died after taking acetanilide for headache (see page 18). The preparation had been purchased from a local chemist under the name of "Daisy" headache powders, which appear, however, to have been sold in packets as supplied by a Leeds firm. At the adjourned inquest on Monday, the East Riding public analyst, Mr. James Baynes, stated that the powders in a packet examined by him varied in weight from 4·6 to 10·89 grains, whilst Dr. Thos. Stevenson said he found the powders in another packet vary from 4 to 7·5 grains in weight. The solicitor representing the proprietors of the powders is reported in a Hull newspaper as having, in their defence, made the remark that "every care was used in making them up in accordance with the British Pharmacopœia, which stipulated the dose as from 3 to 10 grains," but the jury found that death was caused by the powders, and expressed the opinion that there had been gross carelessness in making them up. Such a case as this seems to point to the desirability of pharmacists having a more definite knowledge than is generally possessed of the composition of proprietary preparations they sell. It may also be found advisable in the public interest, no less than on professional grounds, to exercise a certain discretion in supplying such articles, especially if they should happen to be prepared by individuals or firms not properly qualified to deal with substances possessing medicinal properties. There could not be a more striking proof of the impropriety of such persons carrying on trade in medicinal articles than the astonishing explanation offered to account for the variation in weight of these powders.

COUNCIL EXAMINATION PRIZES.—The competition for these prizes will take place at 17, Bloomsbury Square, W.C., and at 36, York Place, Edinburgh, on Wednesday, July 15, at 10 a.m. Those who have passed the Major examination during the present session, and were Associates of the Pharmaceutical Society at the time of passing the examination, are eligible to compete for the prizes, and in the event of their intending to do so they are requested to give notice to the Registrar, Mr. Richard Bremridge, on or before Saturday, July 11, after which date no further entries can be received. The subjects of examination are materia medica, botany, and chemistry, and the first prize is the Pereira medal in silver, the second the Pharmaceutical Society's medal in silver, and the third the Pharmaceutical Society's medal in bronze, presents of books, value about £5, £3, and £2 respectively, given by the late Thomas Hyde Hills in memory of Jacob Bell, being added in eachcase.

PHARMACEUTICAL SOCIETY

MEETING OF THE COUNCIL.

WEDNESDAY, JULY 1, 1896.

MR. WALTER HILLS, PRESIDENT.
MR. JOHN HARRISON, VICE-PRESIDENT.

Present:

Messrs. Allen, Atkins, Bateson, Bottle, Carteighe, Cross, Gostling, Grose, Hampson, Johnston, Martindale, Newsholme, Park, Savory, Southall, Storrar, Symes, and Young.

The minutes of the previous meeting were read and confirmed.

LETTER FROM PROFESSOR ATTFIELD.

The President read the following letter which had been received from Prof. Attfield:—

"Watford, June 8, 1896.

"To the Council of the Pharmaceutical Society of Great Britain.

"Mr. President and Gentlemen,—I am highly gratified to receive the cordial thanks of the Council for my thirty-four years of service as Professor of Practical Chemistry to the Society, and to find that my efforts to promote pharmaceutical education and to encourage good feeling amongst all those engaged in the study and practice of pharmacy have been appreciated by the Council, members, and associates of the Society.

"I beg the Council to assure the Society that I have the deepest sense of all the kindness shown me, and that my love and loyalty to the Society will never cease.

"I am, Mr. President and Gentlemen
"Yours faithfully,
"JOHN ATTFIELD."

ELECTION OF MEMBERS.

Chemists and Druggists.

The following, who were in business before August 1, 1868, having tendered their subscriptions for the current year, were elected "Members" of the Society:—

Bacon, Henry Joseph, Peckham. | Clarke, William, Stockton-on-Tees.

ELECTION OF ASSOCIATES IN BUSINESS.

The following having passed the Minor examination, being in business on their own account, and having tendered their subscriptions for the current year, were elected "Associates in Business" of the Society:—

Brinsford, James Arthur, Bristol. | Johnson, Richard, New Wortley.
Hampshire, Frank Reginald, Sheffield. | McVitae, John Brough, Glasgow.

ELECTION OF ASSOCIATES.

The following, having passed the Minor examination and tendered their subscriptions for the current year, were elected "Associates" of the Society:—

Johnson, John Richard, Over Darwen. | Masterman, Henry, Sowerby.

ELECTION OF STUDENTS.

The following, having passed the First examination and tendered their subscriptions for the current year, were elected "Students' of the Society:—

Butterworth, Ernest, Rochdale. | Sparkes, William P., Hereford.
Coghlan, Frederick Daniel, Carrington. | Vivian, Richard, Penzance.
Humphreys, Sidney, London. | Wallis, James Samue Hayle.
Milne, Joseph, Aberdeen. | Ward, Ernest Baker, Leicester.

RESTORATION TO THE REGISTER.

The name of the following person, who had made the required declarations, and paid the restoration fee, was restored to the Register of Chemists and Druggists:—

William Paterson, High street, Romford.

Several persons were restored to their former status in the Society upon payment of the current year's subscription and the minimum restoration fee of one shilling.

FINANCE COMMITTEE.

The report of this Committee was of the usual character, and recommended sundry accounts for payment.

The PRESIDENT, as Chairman of the Committee, moved the adoption of the report and recommendations. He said there was nothing calling for special mention with regard to the General Fund account. There was a considerable balance in hand on the current account of the Benevolent Fund, but a great portion of it would be absorbed in paying the quarterly annuities now due, and it was considered advisable to let the balance of over £900 on the donation account remain as it was at present. It was hoped that before long other sums would come in which would enable the balance to be invested more satisfactorily than in Consols.

The report was adopted.

BENEVOLENT FUND.

The report of this Committee included a recommendation of grants to the amount of £30 in the following cases:—

A registered Chemist and Druggist (Morley), who has had a paralytic stroke.

An Associate from 1842 to 1851, and member from that date to 1883, some years in business, but now owing to his advanced age, unable to obtain employment. (Liverpool.)

The widow of a pharmaceutical member and subscriber. (Nottingham.)

One other case was not entertained.

The VICE-PRESIDENT, as Chairman of the Committee, in moving the adoption of this report, said it called for no comment, only four cases having come before the Committee yesterday, in three of which they recommended relief, and none were of an exceptional nature.

The report was adopted.

The PRESIDENT said it would interest the Council to hear that he had received a letter from the Secretary of the London Chemists' Assistants' Association, enclosing a contribution of £1 from the Association to the Benevolent Fund. It was gratifying to receive proof of the interest which their younger brethren took in one of the best works carried on by the Society.

LIBRARY, MUSEUM, SCHOOL AND HOUSE COMMITTEE.

Library.

The report of the Librarian had been received, including the following particulars:—

	Attendance.	Total.	Highest.	Lowest.	Average.
May	Day	392	24	6	16
	Evening	110	10	8	6

Circulation of Books.	Total.	Town.	Country.	Carriage paid.
May	154	88	66	16*s.* 1*d.*

Donations to the Library had been announced (*Pharm. Journ.*, June 13, p. 470), and the Committee had directed that the usual letters of thanks be sent to the respective donors.

The Committee had recommended that the under-mentioned works be purchased:—

For the Library in London:—

Southall's Organic Materia Medica, 5th edition, 1896.
Binz, Lectures on Pharmacology, vol. 1, 1895.
Blyth, Foods, 4th edition, 1896
Green, Manual of Botany, vol. 2, 1896.

For the Library in Edinburgh:—

Green, Manual of Botany, vol. 2, 1895.

Museum.

The Curator's report had been received, and included the following particulars:—

	Attendance.	Total.	Highest.	Lowest.	Average.
May	Day	380	27	8	6
	Evening	41	6	1	2

Donations to the Museum had been received (*Pharm. Journ.*, June 13, p. 470), and the Committee recommended that the usual letter of thanks be sent to the respective donors.

The report of this Committee recommended that the Curator be allowed 10 guineas for his expenses in attending the meeting of the Museum Association at Glasgow in August. Also that copies of the Register be sent to the Guildhall Library, as asked for.

The PRESIDENT moved the adoption of the report and recommendations, which was carried unanimously.

THE NORTH BRITISH BRANCH.

The SECRETARY read a letter from Mr. Hill, Assistant Secretary, reporting the names of the gentlemen who had been elected as the Executive of the North British Branch, at a meeting held on June 19 (see *Pharmaceutical Journal*, June 27, p. 515).

THE BURROUGHS MEMORIAL.

Mr. CARTEIGHE said he had, as Chairman of the Burroughs Fund, to formally hand over to the President the deed of trust duly executed, so that it might be taken charge of and placed with the other documents of the Society. He ought to add that Messrs. Flux, Thompson, and Flux had kindly done the legal work in connection with it free of charge.

RESEARCH COMMITTEE.

The PRESIDENT said there had been a meeting of this Committee on the preceding day, when an application by Mr. H. A D. Jowett to be elected a Research Fellow of the Pharmaceutical Society was considered. In the result the Committee seconded that Mr. Jowett be elected. He might remind the Council that Mr. Jowett was a Jacob Bell Scholar, and was also a very good scholar in the Research Laboratory. He had worked for a considerable time in that laboratory under Professor Dunstan, had acted as assistant-lecturer in chemistry, and had been continuously engaged in chemical investigations during the last four years. He had also done a considerable amount of original research, and having complied in every way with the conditions laid down, the Committee had great pleasure in recommending Mr. Jowett to this Research Fellowship. He moved the recommendation be adopted by the Council.

Mr. CARTEIGHE said he had great pleasure in seconding the motion, which was at once carried unanimously.

THE BRITISH PHARMACEUTICAL CONFERENCE.

Mr. MARTINDALE moved that the following be appointed delegates to attend the Conference in Liverpool:—The President, Vice-President, Treasurer, Messrs. Allen, Atkins, Bateson, Carteighe, Cross, Grose, Johnston, Martindale, Newsholme, Park, Southall, Symes, Savory, and Young; the Secretary being also requested to attend the Conference. In moving this resolution he felt sure that they might expect a right royal welcome at Liverpool. He had a pleasant recollection of the meeting there in 1870, and how cordially Lancashire and the Liverpool people received them, and he had no doubt they would be equally hearty in their welcome on this occasion. He hoped that with their proverbial loyalty to the Society the members would attend in full force, and that they might also have the pleasure of seeing many ladies join in the proceedings. He sketched the programme of the Conference and specially pointed to its most salient features, directing attention to the visit to the docks, to Eaton Hall, Chester, Knowsley, and the Prescot watch factory.

Mr. SYMES in seconding the proposition said they were locally taking all pains to ensure the success of the meeting, and were anxious that this gathering should in no way fall short of the meeting of 25 years ago which had left behind it pleasant memories. The watch factory had been mentioned as one of the places to be visited. This had been elected not only as a variation from chemical works, with which most of them had a sufficiently close acquaintance, but the making of the works of watches had been associated with Prescot for some generations, and lately the manufacture had been extended to the full product of a watch and the employment of some 900 hands, whose industry it was thought might interest some of the members. He trusted that the local promoters would be well supported, if only out of loyalty to the Society, and that ladies might form a not unimportant part of the meetings.

The PRESIDENT, in putting the motion, said he hoped the eloquence of Mr. Martindale and Mr. Symes would not be thrown away, and that the former, as President of the Conference, would be thoroughly well supported.

The resolution was put and carried unanimously.

Mr. SYMES added that it was desirable that gentlemen who were going should apply early to the Adelphi Hotel, where accommodation could be obtained.

GENERAL PURPOSES COMMITTEE.

The Council, as usual, went into Committee to hear and consider the legal portion of the report of this Committee.

On resuming, the report and recommendations were adopted, and resolutions passed authorising proceedings against the persons named.

The PRESIDENT then moved :—

"That, on the recommendation of the General Purposes Committee, J. Norman Collie, Ph.D., F.R.S., Assistant Professor of Chemistry in University College, London, be appointed Professor of Chemistry in the Society's School, such appointment to date from October 1, 1896."

Since the last meeting of Council the General Purposes Committee re-appointed a sub-committee, which was requested to advertise the vacancy in the professorship in the *Pharmaceutical Journal*, *Times*, *Athenæum*, *Nature*, and *Chemical News*. In response thereto, sixteen applications were received, and it was gratifying to know that the names included men of very considerable eminence in the scientific world, several of whom were especially qualified in the opinion of the sub-committee for such an appointment. The only difficulty was in selecting the right man, and after much consideration the committee came to the resolution which was embodied in the recommendation he had read. With regard to other matters which were still under consideration, it would be as well to say nothing at present. It was hoped that at the next Council meeting a scheme would be suggested, including many other questions, such as the scale of fees to be paid by the students, the proportion to be handed to the professors, and other matters, and it would be more convenient to present the whole in one scheme. It was important, however, that the Professor of Chemistry should be appointed as early as possible, and he therefore brought forward this resolution.

Mr. BATESON seconded the resolution, which was at once carried unanimously.

PRESENTATION TO MR. M. CARTEIGHE.

The PRESIDENT said the ordinary business of the Council was now concluded, but there remained one little transaction to which he had been empowered to invite Mr. Warren and Mr. Schacht to be present and take part with them. The pleasing duty had devolved upon him as President of the Society, on behalf of the present and past Council, to ask their friend, Mr. Carteighe's acceptance of an address which they had prepared to him, and whose object would best be conveyed in its words, which he would now read :—

"To Michael Carteighe, for the past fourteen years President of the Pharmaceutical Society of Great Britain, a loyal, disinterested, and distinguished advocate of pharmaceutical progress, and of the best interests of the Society.

"We, your colleagues, knowing well the signal value of the services you have rendered in so many and divers ways, desire to mark the occasion of your retirement from the Presidential Chair by asking you to accept the most cordial expression of our esteem, friendship, and goodwill.

"WALTER HILLS, President.
"JOHN HARRISON, Vice-President.
"ROBERT HAMPSON, Treasurer.

"Chas. Bowen Allen.	Nicholas M. Grose.	Geo. F. Schacht.
"Saml. R. Atkins.	John Johnston.	Alfred Southall.
"Thos. Bateson.	Nicholas M. Martin.	David Storrar.
"Alexr. Bottle.	Wm. Martindale.	Charles Symes.
"Octavius Corder.	G. T. W. Newsholme.	Wm. Warren.
"Wm. Gowen Cross.	Chas. Jas. Park.	Jno. Rymer Young.
"Thos. Preston Gostling.	Arthur L. Savory.	

"RICHARD BREMRIDGE, Registrar."

Handing the address to Mr. Carteighe, the PRESIDENT continued: I ask you in the name of those who have signed this address to accept it as a little expression of our best thanks for your past services, and of our admiration for the loyalty and disinterestedness with which you have worked for pharmaceutical interests. We also desire to express our heartfelt wish that you may long continue in the enjoyment of health and happiness, and that for many years the welfare of pharmacy may continue to have the benefit of your warm and active support. A great man has said that every man is a debtor to his own calling. Perhaps no man has discharged this obligation with greater zeal and more self-denying devotion than you have in the interests of our common calling. I do not propose to enter into details on this occasion, but I would like to place on record how from the time when you as a distinguished student carried away the Pereira medal up to the present moment you have ungrudingly spent your time, your means, and your abilities in the service of the Pharmaceutical Society—that you have filled various offices, culminating in an historical presidency of fourteen years with very remarkable zeal and ability. We who have worked with you for longer or shorter periods on the Council are perhaps best able to bear testimony not only to your wonderful capacity for work and your unceasing interest in it, but also to the cheerfulness and *bonhomie*—I know no English word that can so well describe my meaning—which are such marked features in your character and which lighten work, inspire confidence, and beget affectionate regard. The intimate acquaintance with you makes us desirous thus publicly to express our esteem and affection for you. Perhaps no single member of the Pharmaceutical Society is better known throughout the country than yourself, and yet in spite of the public work you have done and the provincial journeys you have undertaken there must be many who are personally unacquainted with you. We, who have had opportunities of working with you and being behind the scenes, desire by means of the Press to enlighten those outside on these matters and to let them know a little about yourself and how much we esteem many of your characteristics. A few days ago the worthy Chairman of our North British Branch is reported to have said: "When Mr. Carteighe first came to Scotland he was regarded with something like suspicion, and for a time there was something like misunderstanding and antagonism. But as time passed and opportunities for personal intercourse were multiplied, all such ideas vanished. His sincerity and unexampled ability won their admiration, and now he felt sure that Mr. Carteighe had no warmer friends anywhere than in Scotland, and speaking for Scottish pharmacists he could assure him of their grateful and affectionate esteem." In this form we desire to express our admiration of Mr. Carteighe as a thoroughly good fellow, and a kind and sincere friend, and we ask him to accept this address in that sense, and with an earnest desire that he may continue to help us in the future as he has done in the past, and every wish that he may have a long and happy life.

Mr. CARTEIGHE said this presentation had taken him by surprise. He was not considered generally to be weak in discharging any duties of this kind, and he was not much afraid of being attacked; but there was one form of attack which was very difficult to bear, and that was this magnificent testimony of the affectionate regard of his colleagues. He could not say more, except that he thanked them from the bottom of his heart.

MAJOR EXAMINATION QUESTIONS.

CHEMISTRY.

June 26, 1896.—*Time, from* 10 *a.m. to* 1 *p.m.*

[*Six questions only are to be attempted.*]

1. What is meant by *atomic* and *molecular volume*, and what relationship has been found to exist between the atomic weights and the atomic volumes of the elements?

2. Starting with a paraffin hydrocarbon, how can hydrocarbons of the olefine, acetylene, and benzene series respectively be obtained from it?

3. Grape-sugar is believed to be an aldehyde. Indicate the evidence on which this belief rests.

4. Felspar is a double silicate of potassium and aluminium. Describe how you would propose to prepare specimens of potassium sulphate, aluminium sulphate, and amorphous silica from it.

5. You are given a non-volatile organic base. Indicate how you would ascertain its molecular formula.

6. How are the following substances usually prepared:—(*a*) potassium permanganate, (*b*) potassium dichromate, (*c*) potassium nitrate, (*d*) red lead, (*e*) mercuric chloride?

7. How can glycerine be synthesised from its elements, and what important organic compounds can be prepared from it, and how?

8. Show by equations what takes place when sulphuretted hydrogen acts on (*a*) sulphur dioxide, (*b*) an aqueous solution of iodine, (*c*) a solution of ferric chloride, (*d*) a solution of potassium dichromate acidulated with hydrochloric acid, (*e*) strong sulphuric acid, (*f*) a solution of caustic potash.

9. How is aniline commercially prepared from benzene? Describe the principal properties of aniline and some of the more important reactions into which it may be made to enter.

PHYSICS.

June 26, 1896.—*Time, from* 2 *to* 5 *p.m.*

[*Six Questions only to be attempted.*]

1. Describe the manufacture, calibration and graduation of a mercurial thermometer. What scales are in use and what is the relation between them?

2. What are the different applications of the terms "heat" and "temperature"? Illustrate your answer by examples.

3. Why is the interior of a greenhouse hotter than the surrounding air (assuming that artificial heat is not used)? Has the explanation any reference to the meteorological instrument called the black bulb thermometer in vacuo?

4. Describe the action of the magnifying glass. How is it that a small object, such as a needle point, appears magnified when it is seen through a small hole in a piece of card?

5. Describe the construction and uses of the spectroscope.

6. Describe the construction and action of some form of frictional electric machine.

7. What is a secondary battery? State the chemical changes involved in its action.

8. What is a magnet? Describe its properties and state how it can be ascertained if a body is magnetised. How has magnetism been explained?

9. What happens if an electric current is passed through a helix of copper wire suspended vertically with its lower end in mercury? Explain the cause of he phenomenon.

A Paper.*

BOTANY AND MATERIA MEDICA.

Saturday, June 27, 1896.—10 *a.m. to* 1 *p.m.*

1. Indicate by means of a table the characteristic features and systematic positions of the following natural orders of plants:—Cupuliferæ, Salicaceæ, Orchidaceæ, Graminaceæ, Umbelliferæ, Rutaceæ.

2. Describe the mechanism for the dispersion of the spores in a moss, a fern, and a horsetail.

3. How far may the flower be considered to be represented among the vascular Cryptogams? Describe fully in each case you mention the structure which you consider the equivalent of the flower in Phanerogams.

4. From what source is Copaiba obtained? What is its composition? What tests would you apply to ascertain the purity of a given sample?

5. What drugs are obtained from plants belonging to the natural orders Liliaceæ and Cucurbitaceæ? Describe one from each natural order.

B Paper.*

PRACTICAL BOTANY AND MATERIA MEDICA.

Saturday, June 27, 1896.—10 *a.m. to* 1 *p.m.*

1. Refer each of the flowers provided to its Natural Order, and give briefly your reasons in each case.

2. Make not more than two microscopical preparations, illustrating the structure of A. Leave your preparations with explanatory sketches for examination.

3. Identify by means of microscopic examination and micro-chemical tests the constituents of the powder B. Write a short account of your observations.

4. Identify and briefly describe the mounted preparations C, D.

A Paper.*

PRACTICAL BOTANY AND MATERIA MEDICA.

Saturday, June 27, 1896.—2 *to* 5 *p.m.*

1. Refer each of the flowers provided to its Natural Order, and give briefly your reasons in each case.

2. Make not more than two microscopical preparations, illustrating the structure of E. Leave your preparations with explanatory sketches for examination.

3. Identify by means of microscopic examination and micro-chemical tests the constituents of the powder F. Write a short account of your observations.

4. Identify and briefly describe the mounted preparations G, H.

B Paper.*

BOTANY AND MATERIA MEDICA.

Saturday, June 27, 1896.—2 *to* 5 *p.m.*

1. Indicate by means of a table the characteristic features and systematic positions of the following natural orders of plants:—

Solanaceæ, Convolvulaceæ, Gentianaceæ, Scrophulariaceæ, and Labiatæ.

2. What is *heterospory?* In what groups of plants does it occur? What is its biological significance?

3. Describe with diagrams the anatomical structure of the stem of (1) Equisetum; (2) the common fern.

4. From what source is balsam of Peru obtained? What is its composition? What tests would you apply to ascertain the purity of a given sample?

5. What drugs are obtained from plants belonging to the natural orders Polygonaceæ and Myrtaceæ? Describe one from each natural order.

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* Part of the candidates received the papers A, A, and the remainder had the papers B, B.

PROPRIETARY ARTICLES TRADE ASSOCIATION.

The first meeting of the recently elected Council of this Association was held on Wednesday, June 24, at Anderton's Hotel, London, Mr. James Elliman in the chair.

The report of the Executive Committee was read, and stated that since the last meeting of the Council the Committee appointed to confer with the Grocers' Federation had met the committee of that Federation. The scheme was discussed by the latter committee and favourably received. Subsequently a detailed statement of the Council's proposals was sent to the Secretary of the Federation, with an intimation that the Council was advised that the proposals were legal. The Committee of the Grocers' Federation had since met and had written for a copy of the counsel's opinion, in order that the advice of the Federation's solicitor might be had on the matter. The opinion referred to had been sent, on the understanding that it should be treated as a confidential document, and the report of the Committee would be brought up at the annual meeting of the Federation to be held at Cardiff during the course of July. So far the proprietors of the following articles are prepared to commence protection on the lines indicated in the report of the Executive Committee:—

Invalid Bovril.	Scott's Pills.
Frog in your Throat.	Condal Water.
Liebig's Peptone of Beef.	Johnston's Soothing Syrup.
Hall's Coca Wine.	Sutton and Co's Proprietaries.

In the discussion which followed the reading of the report,

Mr. Elliman said he could not add his embrocation to the combination, as his firm was not prepared to co-operate with any proprietors who did not protect the article for which they had the most sale, and he also objected to combine with any house which stipulated that the advertised price should be the minimum price. He was of opinion that it was absolutely necessary to allow a discount to cash customers, and he thought that it would be found impossible to insist upon full prices being obtained. His article was already protected, and he would certainly not run any risk of failure.

Mr. Gilligan, for the Liebig Co., stated that the only reason for not adding the Company's Meat Extract to the present list was that so far this organisation was pre-eminently a combination of those engaged in the chemist's business. Their extract of meat was much more largely distributed by grocers, and they would have great pleasure in protecting their extract upon similar lines when a large number of grocers had joined the organisation.

Mr. Shorrock (Bovril, Limited), said that was also the position of his firm. Invalid Bovril was an article distributed by chemists only, and at this junction it was thought wise to confine the present arrangement to that article.

Mr. Glyn-Jones stated that the Executive Committee had recognised the difficulties in the way of those firms whose articles were much more largely handled by members of the grocery trade than by chemists, and had come to the conclusion that it would be wise, by way of experiment, to immediately start operations with those articles the proprietors of which were at present prepared to commence. The responsibility for the size of the list or of the importance of the articles would largely lie with the retailers themselves. At any rate, the present articles would afford an opportunity for putting the Association's plan into operation. If it was successful it could be applied to other articles having a large or a small consumption, and if it was found satisfactory, it would be the fault of the retailers themselves if they did not convey their wishes sufficiently clearly to the other manufacturers connected with the Association, and use their utmost endeavours to induce them to add their articles to the combination.

A resolution adopting this list was put to the meeting and carried.

BRITISH DENTAL ASSOCIATION.

MEETING AT SHEFFIELD.

The annual meetings of the Midland Branch of the British Dental Association commenced at Sheffield on June 26, when Mr. J. D. Storey, L.D.S., of Hull, presided over a gathering at Firth College. The annual report having been adopted, Mr. Blandy (Nottingham) proposed Mr. I. Renshaw (Rochdale), as President for the ensuing year, which was seconded by Mr. Stokes (Sheffield), and carried. Mr. Renshaw will continue the duties of Hon.-Secretary, and the other officers were re-elected. In his valedictory address, Mr. Storey lamented the fact that the membership of the Association is almost stationary, asserted his firm adherence to the principle of excluding advertising practitioners, and condemned in the strongest terms "the disgusting advertisements and blatant charlatanism" of dealers in tooth wares. He attributed to the practices of these people the origin of three common ideas which the public seemed to have assumed as axioms of the dental profession, naming them, amidst laughter, as (1) consultations free, (2) removal of roots unnecessary, and (3) treatment at so much per tooth. "How long," he asked, "were the public to have the idea that dentists sold teeth?" The idea was, of course, absurd; a dentist's charges, like a doctor's, were for professional services rendered, and perhaps the best way of dealing with people who asked "how much a tooth?" would be to give them a handful, and let them see that the bill was not reckoned up in that way. —Mr. Frank Harrison (Sheffield), the President-elect, presented a paper containing a record of experiments with the *x*-rays, made with a view of testing the value of the discovery to the science of dentistry. In diagnosis, he said, the employment of the rays would be most helpful, and he also pointed out how useful the *x*-rays would be in the construction of artifical crowns, the treatment of roots, cases of difficult eruption of teeth, and others where the organs were enveloped in tissue opaque under ordinary conditions. In conclusion, Mr. Harrison mentioned that he was aided in his experiments by one of his assistants, and this young man found that the constant application of the *x*-rays to his face had had the result of destroying the hair of his beard and moustache. A good deal of laughter followed this announcement, and the merriment increased when Dr. Gaddes (Harrogate) humorously suggested that the unfortunate experience of Mr. Harrison's assistant might turn out to be most valuable in the treatment and ultimate removal of the obtrusive ciliary appendages which are sometimes such a disfigurement to ladies. After luncheon the members assembled at the Royal Hospital, where a number of practical demonstrations were carried out in the dental operating rooms. In the evening there was a dinner at the Masonic Hall under the presidency of Mr. Frank Harrison. Dr. Dyson, one of the leading medical practitioners in the city, who proposed "The British Dental Association and the Midland Branch," said he was glad to see they were setting their face against "teeth windows," and against advertising in its most objectionable form. They were doing their best to elevate the profession to which they belonged, and a very necessary and noble profession it was. Mr. A. A. Matthews (Bradford) in the course of his response said the Association, which has 900 members, was open to anyone who was on the Dental Register, who did not advertise, and who conducted his business in a professional manner.

INQUEST.

THE DANGER OF SYNTHETIC REMEDIES.

DEATH CAUSED BY ACETANILIDE.

An adjourned inquest on the body of Ada Waterhouse, a young woman who died under singular circumstances at Howden on May 30, after taking a headache powder advertised as the "Daisy" Powders, was held, June 29, before Mr. Hy. Green, Coroner, when the medical and scientific evidence was taken.

The evidence of Dr. Chestnutt and Mr. Tireman, who were called in to the deceased half an hour after she had taken the powder, and who subsequently held the post-mortem examination, was to the effect that no doubt was left in their minds that the death ensued from taking the "Daisy" powder, Dr. Chestnutt stating that notwithstanding the fact that the dose of acetanilide or antifebrin, of which the powders were composed, was given in the British Pharmacopœia as from 3 to 10 grains, it was held by the profession, after a report on the drug by a committee of the British Medical Association, that anything over 5 grains was highly dangerous. The powders, the last witness said, were really a drunken "pick-me-up," and were largely used in the West Riding. He had tested some of the same powders purchased from the same place as those obtained by deceased, and they varied from 8½ to 11½ grains.

The certificate of the Public Analyst (Mr. J. J. Baynes) of Hull was put in, in which it was said that though no trace of the powder was found in the stomach of the deceased on analysis, it was not expected that it would be, as they decompose so very rapidly. "Daisy" powders were analysed, and found to contain 4·60 grains to 10·89 grains of acetanilide, a packet of twenty showing signs of very great and gross carelessness in making up the powders.

Dr. Stevenson, scientific analyst from the Home Office, to whom a "Daisy" powder was sent, stated that the powder was composed of 10·6 grains of almost pure acetanilide, which he considered a very full dose. A packet he purchased for analysis resulted in a variation of the powders of from 4 to 7½ grains, agreeing with the Public Analyst that in some cases the packet contained double doses as compared with others. He was of opinion that any dose of above 3 grains of acetanilide ought not to be administered except under medical advice.

Mr. Wormald, solicitor, of Leeds, represented Messrs. Ellis and Co., of Holbeck New Mills, Leeds, the proprietors of the "Daisy" powders, who expressed their regret at the circumstances under which the inquiry was being held, but said every care had been used by his clients in making the powders up, and added though millions had been sold, this was the first case of the kind which had occurred.

The jury, after, a short deliberation, returned a verdict that the deceased "Died from the effects of taking a 'Daisy' powder," and expressed the opinion that there had been gross carelessness in making up the same.

SCOTTISH NEWS.

KEATING'S INSECT POWDER IN COURT.—An action was raised some time ago in the Court of Session, Edinburgh, by the firm of Thos. Keating, manufacturers of Keating's insect powder, 12, Bride Lane, London, against Alex. Malcolm, chemist, Dundee. Plaintiffs sought to have the defendant interdicted and prohibited from selling as Keating's insect powder, a powder which was not manufactured by them, and also for payment of £100 as damages.—The defence was a denial of the plaintiff's averments, but the case has now been taken out of court, the defendant having tendered, and the plaintiffs accepted, a sum of £5 as damages and £5 5*s*. as expenses in the action.

CHEMISTS AND RÖNTGEN PHOTOGRAPHY.—A large number of chemists and druggists are more or less skilled photographers, and the new application of the *x* rays as an aid in surgical diagnosis may well furnish a new and appropriate outlet for their photographic skill. In the small country town of Alyth, Stirlingshire, Mr. Alexander Adam, an Associate of the Society, in co-operation with a local medical practitioner, recently invested in an outfit from Messrs. Brady and Martin, consisting of a 3-cell bichromate battery, an induction coil with commutator, and a frame for holding the object to be photographed, with supports at each end to which is attached the vacuum tube. After experimenting a few times with his own hand, Mr. Adam succeeded in getting an excellent negative showing the bones distinctly. The first case was a lady, who had accidently run a needle into the ball of the thumb. An ordinary examination failed to disclose the position of the needle, and an excellent Röntgen photograph showed that it had moved right across the hand to the neighbourhood of the little finger. It was cut down on and easily extracted. In another case the bones of the foot were successfully photographed. This seems a department in which doctors and pharmacists may well co-operate.

MESSRS. T. AND H. SMITH AND CO.'S EMPLOYÉS' PICNIC.—The employés of the Duke Street warehouse and office of T. and H. Smith and Co., Edinburgh, held their annual picnic on Saturday last, June 27. Driving by way of Kirknewton, the party encamped at Leithhead, a charming spot on the north-west slope of the Pentland Hills, and there spent a very enjoyable time, the weather being most favourable. Cricket, football, tug-of-war, and other sports were indulged in, and the company returned to town *vid* Juniper Green at 10 p.m. after a day of unqualified pleasure.

NEW REMEDIES.

[*The notes given under this heading embody recent suggestions in therapeutics. They cover both new drugs and preparations, and old ones under new aspects. The word "parts" is used to represent parts by weight, both for solids and liquids.*]

BRYONIN AS A CATHARTIC.—Bryonin, which is one of the glucosides of *Bryonia alba*, is an efficient cathartic and is also distinctly diuretic. Its administration is indicated in cases of ascites and in congestive states of the liver and in all chronic inflammatory conditions of the serous membranes. It is best prescribed in the form of granules, containing each one milligramme of the drug; thus: bryonin, 10 centigrammes; sugar of milk, 4 grammes; gum acacia, 1 gramme, syrup sufficient to mass; divide into 100 granules. One such granule is given every two hours until a sufficient action of the bowels is obtained, after which one granule twice or three times a day is sufficient (*Intern. Med. Mag*, v., 131, after *Therap. Woch.*).

OIL AND EGG IN CHRONIC MALNUTRITION OF INFANTS.—The following combination of yolk of egg and olive oil has been found useful in rickets and chronic malnutrition of infants. Olive oil, 2 ounces; glycerin, 1 ounce; yolk of one egg. Make an emulsion and add half a minim of creosote to each drachm. A full teaspoonful of this emulsion is given three times a day after feeding (*Pract.*, lvi., 445).

ALUMNOL IN GONORRHŒA.—Chotzen finds that urethral injection of a one per cent. solution of alumnol destroys the gonococci without increasing the inflammation. For anterior urethritis a one or two per cent. solution is used, at first six and later three times a day. In posterior urethritis a solution of from one to five per cent. is instilled, or alumnol ichthyolate is employed (*Therap. Gaz.* [3], xii., 158, after *Journ. de Méd.*).

SILVER NITRATE FOR SWEATING FEET.—An eminent French authority recommends the following:—Bathe the soles of the feet and the spaces between the toes every morning with a ten per cent. alcoholic solution of silver nitrate. The application should be continued until the horny layer formed upon those parts falls off (*Mod. Med.*, v., 13).

MERCURIC CYANIDE IN OPHTHALMIC PRACTICE.—Fromaget has found that mercuric cyanide may be usefully substituted for the corresponding chloride in those cases of eye disease where the latter is called for: it is a powerful antiseptic and gives rise to much less pain and irritation. He employs two solutions, the stronger consisting of 25 centigrammes of the cyanide in 25 cubic centimetres of water; the weaker being half this strength. In the majority of cases the latter suffices, but where a prompt action is required the stronger solution may be used. The author has injected as much as a centigramme of the cyanide without any untoward symptoms and never employs less than 5 milligrammes. In the form of subconjunctival injections in infectious keratitis this salt has been very efficacious (*Rev. de Therap.*, lxiii., 182, after *Gaz. hebdom. des Sciences Med. de Bourd.*).

LACTATE OF STRONTIUM IN NEPHRITIS.—Further researches on the action of strontium lactate by Bronovski tend to show that the salt is without the least action on the amount of albumin excreted, although it possesses markedly diuretic characters. It does not diminish intestinal decomposition, since the author finds it to possess only very slight antiseptic powers (*Bull. Gen. de Thérap.* [6], i., 167, after *Vratch.*).

EUDOXINE IN INTESTINAL CATARRH.—Further notes on this bismuth salt, which contains iodine and phenol, have been recorded, and show that it has proved useful in intestinal catarrh, particularly where tuberculosis is present. The dose is 15 grains three times a day. In chronic inflammation of the intestine it seems to exercise a curative effect, and is also beneficial in colic with tympanites, dyspepsia, and diarrhœa. The dose for a child of two months is half a grain three times a day; for four months, 1 grain; for one year, 1½ grain (*Therap. Gaz.* [3], xii., 113, after *Journ. de Méd. de Paris*).

CORRESPONDENCE.

All Articles, Letters, Notices, and Reports intended for publication in the Journal, Books for Review, and communications respecting Editorial matters generally must be Addressed "Editor, 17, Bloomsbury Square, London," and not in any case to individuals supposed to be connected with the Editorial Staff. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

ANY INSTRUCTIONS from Members, Associates, and Students of the Pharmaceutical Society, with reference to the transmission of the Journal, should be sent to the Secretary — Mr. Richard Bremridge,— 17, Bloomsbury Square, London.

BUSINESS communications—including advertisements, orders for copies of the JOURNAL, and instructions from Subscribers respecting transmission of same—must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London. Cheques and money orders should be made payable to "Street Brothers."

CORRESPONDENTS who wish notice to be taken of their communications must write in ink, on one side of the paper only, and should authenticate the matter sent with their names and addresses—of course not necessarily for publication. No notice can be taken of anonymous communications.

DRAWINGS for illustrations should be executed twice the desired size; clean sharp lines being drawn with a pen and liquid Chinese ink. Shading by washes is inadmissible. Photographs can be utilised in certain cases.

NAMES AND FORMULÆ should be written with extra care, all systematic names of plants and animals being underlined, and capital letters used to commence generic but not specific names.

REPRINTS of articles cannot be supplied unless authors communicate with the Editor before publication.

THE MINOR EXAMINATION.

Sir,—So much has been written about the Minor Examination o the present day, and also by some who have been in the trade twenty years, I thought perhaps you might find space for the opinion of a modern chemist. One thing which we are often asked to look at, to which I have seen no answer given, is the large percentage of failures in the Minor Examination. At first it seems great, but not to those who have just gone through and know the reason. The number of young fellows who go to college for three months, starting without any idea of any one of the subjects, and enter for the next examination, is enormous. Many times I have heard one student ask another if he is going in, as he ought, there being such a tremendous amount of luck attached to it, and if he fails it is only three guineas thrown away; consequently, he goes in and fails. Another class to deal with are those whose parents, having plenty of money, send their sons whatever they ask for. They attend college occasionally, without the remotest intention of study, and at the end of twelve months "have a cut at it, or else the old boy will be annoyed." Many of these have never done an hour's reading the whole time.

A large number of failures are also due to students who get up all their work with the exception of one simple subject, *i.e.*, doses, etc., for which they trust to luck, but they find their mistakes out when it is too late. Before, failure has always been attributed to the "nervous "man and "bullying" examiners. This has not been my experience. I have not seen a "bullying" examiner, but I know a nervous man in myself, and, from my own experience, find in such a case the examiners do everything in their power to make things as pleasant as can be under the circumstances. The first time I went in I had not paid as much attention as I should have to botany, the result being I got to my last subject, botany, and failed; but, at the same time, I was surprised to find how easy the examination was, and different from what is described. Taking a part time situation, and carefully going through botany, sent me through the next time. I had the recognised bully (?) for each subject, and found each one a thorough gentleman.

Another serious point I should like to mention in connection with the large percentage of failures is the Pharmaceutical Society's responsibility for such. The Preliminary Examination is a snare, many fellows entering for this five or six times before passing, who have not the slightest chance of passing the Minor.

This is why I think, instead of so much being written about the Minor, the Preliminary should be looked at first, and every boy should be made to pass this before his apprenticeship. It

should also include chemistry (elementary inorganic), botany (elementary) and geography.

It is not the slightest use—as a large number of young men do—to cram up the habitat of various barks, rhizomes, etc., without the remotest knowledge where such places are. After the Preliminary has been seen to, then should come the Minor, which should be more scientific and thorough than it is now, and each student instead of being advised to have six months only at college should be compelled to spend six or twelve months at some good school.

Torquay, June 24, 1896. THIS YEAR'S MINOR.

POISONING BY SORREL LEAVES.

Sir,—Your issue of the 27th ult. gives an instance of the death of two children through eating the leaves of sorrel; it is an unfortunate thing that with all the educational appliances of the day, acquaintance with the nature of poisonous plants is omitted. In Germany and France, as I am informed, this important and very interesting branch of knowledge is part of everyday school teaching. A late reverend gentleman insisted on elementary botany in his parochial school, and the effects of this instruction proved of great advantage both to teachers and scholars. Children are, as a rule, fond of experimenting; they make each other's tongues bleed by stroking them with *Asperula aparine;* are fond of tasting berries of various kinds; digging up and eating earth nuts and many other risky tricks. Some of a mischievous turn will slip an ear of *Hordeum* down the back of a companion, or even the fruits of *Rosa canina*—known by urchins as "tormentors"—but all this play is the result of thoughtlessness, and should be controlled. In this case the children may have been peculiarly susceptible, perhaps devoured a considerable quantity of the leaves, or had empty stomachs. In any case the loss of life is lamentable, as it was a preventable accident. The post-mortem examination proved the existence of "a small quantity of oxalic acid in each case." The antidotes chalk and limewater were not, in my humble opinion, the most suitable, forming an insoluble, indigestible compound—calcium oxalate. I submit, with all due deference to medical authority, that liquor potassæ in milk would have been better.

By a remarkable coincidence your correspondent, Mr. A. H. Hinde, notices the use of oxalic acid as an ingredient of lemonade recommended in a popular journal called *Success.* It brings to mind something I read many years since in an elementary book published, I believe, by the Religious Tract Society. Speaking of sorrel, the author states that "the different species contain oxalic acid, and are used for making cooling drinks or in salads." Moreover, that "oxalic is quite harmless when used in moderation, that workmen employed in factories where it is made are in the habit of drinking a dilute solution as a refreshing beverage and to allay thirst." We all appreciate the delicious tarts the cook produces from rhubarb, the agreeable acidity of which is due to the presence of oxalic acid, that exists in considerable quantity in the succulent stalks. It would thus appear that the "prize amateur" in *Success* has really achieved one in recommending oxalic acid duly qualified with sugar and proportionately diluted with water.

Twickenham, June 29, 1896. R. GOODWIN MUMBRAY.

LIQUOR BISMUTHI ET AMMONIÆ CITRATIS.

Sir,—Mr. J. F. Brown finds that sodii bicarb. and liq. bismuthi, 1885, make a cloudy mixture. I have dispensed the two together in the proportion of 1 drachm and 6 drachms in 6-oz. mixtures perfectly clear; the same mixture with 3 drachms sp. chlorof. in addition also remained clear, and the addition of 1 drachm hydrocyanic acid did not affect it. It would be interesting to his brother dispensers if Mr. Brown would give a copy of his prescription.

Birkenhead, June 29, 1896. H. O. DUTTON.

PUBLICATIONS RECEIVED.

CHEMICAL NOTES AND EQUATIONS. By G. H. GEMMELL, F.I.C., F.C.S. Pp. 244. Price 5*s.* London: Baillière, Tindall and Cox, 1896. From the Publishers.

OUR NEW POSITION IN THE ESSENTIAL OIL MARKET. London: Martin Perls and Co., Basinghall Street, E.C., 1896. From the Publishers.

ANSWERS TO QUERIES.

[*Queries addressed to the "Editorial Department,* 17, *Bloomsbury Square, W.C.," will be replied to in the Journal as early as possible after receipt, but the Editor cannot undertake to reply to them through the post, nor is it always possible to publish answers the same week. Questions on different subjects should be written on separate slips of paper, each of which should bear the sender's name or initials. Readers requiring working formulæ for special preparations, and intimating their wants to the Editor, will be assisted as far as may be practicable. The word "parts," when used in formulæ, invariably indicates parts by weight.*]

BOTANICAL SPECIMENS.—Apparently *Potamogeton rufescens,* but it arrived in very bad condition. The small plant is a moss, *Fontinalis antipyretica.*

USE OF DARK ROOM, ETC.—It is usual and wiser to make no charge to customers who wish to change plates. To strangers who do not make any purchase, and for developing, etc., a fee of 1*s.* might be charged, if the room is not occupied for more than an hour, and 1*s.* for each hour or part of an hour afterwards. [*Reply to* "ACID. CITRIC."]

BOOKS ON PRACTICAL ANALYSIS.—For water you will find Wanklyn's little book 'Water Analysis' (Kegan Paul, Trench, Trübner, and Co.) most useful. For other general work Pearmain and Moore's concise laboratory note-book on the 'Analysis of Food and Drugs' (Bailliére, Tindall and Cox) is handy, since it is an excellent compilation and condensation of the current literature of the subject: modern processes are explained and practical details given in clear, concise language. [*Reply to* "A. P. S."]

TO CLEAR RENNET.—Presumably you mean the liquid essence. Allow this to stand for a day or two, pour off from any sediment, then take some ordinary filter paper, tear it up small, and shake well with a little of the fluid to make a mass; then turn into the rest of the liquid and shake up well. On standing, the greater part of the mucus will adhere to the shreds of paper and settle down. The supernatant liquid may then be filtered bright through an ordinary filter. [*Reply to* "A. P. S."]

HYOSCYAMUS NIGER.—Yes, it is an authentic specimen of the plant. [*Reply to* H. G. MADDISON.]

MERCURIC OXYCYANIDE.—This compound has the composition $HgCy_2HgO$, and can be obtained in small needles by dissolving HgO in a warm aqueous solution of $HgCy_2$ and crystallising. It is very slightly soluble in water, and explodes when heated. If you cannot procure it from the wholesale drug houses you deal with, apply to Messrs. Harrington Brothers, 53A, City Road, London, E.C.; but why not make a little for yourself? [*Reply to* "LIVERPOOL."]

A CORRECTION.

OBITUARY NOTICE.—Mr. J. Burton, of Llandudno, points out that the first initial of his late son's name—Joseph Montague Charles Burton—was omitted in the obituary notice published last week on page 518. The omission was due to indistinct writing in the notice supplied, which was copied from the certificate of death.

OBITUARY.

ROBERTSON.—On June 23, William Thomson Robertson, Chemist and Druggist, Glasgow. (Aged 34.)

LEASK.—On June 26, John Leask, Chemist and Druggist, Edinburgh. (Aged 32.) Mr. Leask was an Associate in Business of the Pharmaceutical Society.

PUBLISHERS' NOTICE.

COVERS FOR BINDING.

CLOTH gilt lettered covers for binding the half-yearly volumes of the *Pharmaceutical Journal* are supplied by the Publishers.

THE charge, including postage, is 1*s.* 6*d.* each, and should be remitted to the Publishers, 5, Serle Street, London, W.C.

COMMUNICATIONS, LETTERS, ETC., have been received from Messrs. Allen, Brown, Duncan, Dutton, Fox, Glyn-Jones, Hallaway, Harrison, Hermann, Hill, Horniblow, Hudson, Ince, Jaffe, Jarvis, Maddison, Morgan, Morris, Mumbray, Reynolds, Shirras, Smith, Thomas, Thorp, Wall, Welford, Wright, Wyatt, Wyley.

10 JUL 96 LIBRARY

SPURIOUS BLOOD ROOT.

BY E. M. HOLMES, F.L.S.

Curator of the Pharmaceutical Society's Museums.

As a rule drugs are adulterated only when they are high in price, and then with others that are less expensive. When this is not the case the term adulteration can scarcely be applied. A commercial sample of the rhizome of *Sanguinaria canadensis* that recently came under my notice contained another more expensive rhizome, very like it in shape, but differing slightly in colour, to the extent of about 40 per cent.

This rhizome I have been able to identify with that of *Chamælirium carolinianum*, Willd., better known as *Helonias dioica*. As this rhizome is nearly three times as expensive as *Sanguinaria*, it was obviously an admixture, either through ignorance of the exporter or through carelessness. Instances of this kind are comparatively rare, but serve to remind the retail pharmacist that he, and not the wholesale houses, is really responsible for the safety of the public.

1. *Sanguinaria canadensis*:—1*a*. Showing annual growth, and 1*b*. with traces of leaf scars 1*c*. Transverse section, magnified. 2. *Chamælirium carolinianum*, Willd.:—2*a*. Showing annual growth and endogenous character of rootlets. 2*b*. Younger rhizome. 2*c*. Transverse section, magnified.

The rhizome of *Chamælirium carolinianum*, Willd. (*C. luteum*, A. Gray) was found by Dr. T. V. Greene to contain a bitter principle called chamælirin, which is stated to act as a cardiac depressant, *i.e.*, exactly opposite to the primary action of *Sanguinaria*. In medicine the rhizome is used as a tonic, diuretic, and anthelmintic.

The two rhizomes may be distinguished as follows: That of *S. canadensis* has an annual growth marked by constrictions, giving to it a knotted or moniliform appearance. It is scarred with the appressed bases of the leaves, which form not very obvious dark lines on the surface about 2 Mm. apart. Rootlets are rarely present, and are very slender, blackish, and easily broken off. The transverse surface of the rhizome, when cut, shows either a uniform dark blood-red colour or a whitish starchy surface with numerous red dots scattered over it. The root bark forms a thin blackish line.

The rhizome of *Chamlœirium* is almost identical in size and general appearance, but the transverse marks are much more numerous and form whitish wavy lines only ½ Mm. apart, and as seen under a good lens they project at right angles to the rhizome. The external surface of the rhizome is greyish, and the rootlets are evidently those of a monocotyledon, as they are not continuous with the outer surface, each leaving a small hole when broken off, thus giving to the rhizome a perforated appearance, which is, of course, not seen in *Sanguinaria*. The transverse surface is of a dirty white hue and horny texture, and exhibits a well-defined central column occupying about one-third of the diameter, and containing irregularly placed vascular bundles. The outer portion surrounding the central column shows a few scattered holes containing traces of the rootlets, but there are never any red resinous dots present, as in *Sanguinaria*. It is easily detected, therefore, by the greyish surface perforated with small holes, and by the transverse section exhibiting a well-defined central column.

THE EFFECT OF PHOSPHATIC MANURES ON THE GROWTH OF JALAP TUBERS.

BY DAVID HOOPER,

Officiating Government Botanist and Director of Cinchona Plantations, Nilgiris.

For many years past the jalap plant (*Ipomœa purga*) has been successfully cultivated in the Government cinchona plantations at Dodabetta, Nilgiris, and quantities of the dried tubers have been supplied annually to the Madras Medical Store Department. The valuable qualities of the tubers grown on these hills have been noticed on various occasions since they were introduced in the year 1870. Some of the first samples of the drug analysed in England yielded 18 per cent. of resin, and samples of the mixed powder from consignments sent to the Medical Stores have contained from 16 to 17 per cent. of the active principle.

About two years ago it was noticed that the plants were not in their usually healthy condition; they did not flower so freely, and the tubers were slightly discoloured and of smaller size. It was supposed that the land in which the crop had been grown year after year was becoming exhausted and the plants were not assimilating sufficient nourishment, and this supposition was borne out by the fact that the tubers from this plot contained only 12·9 per cent. of resin. Some of these tubers were transferred to some freshly-manured soil, and, after a few months' growth in their new surroundings, the tubers were examined and found to contain 15·3 per cent. of jalap resin. In another experiment, a fine large tuber which had been growing in the neighbourhood of a manure heap afforded as much as 22 per cent. of resin, which may be considered the largest yield on record.

The question of manuring is one of great importance in cultivating drugs for the purpose of increasing their active principles. It has been proved over and over again in cinchona culture that nitrogenous and phosphatic manures increase the amount of alkaloids in the bark; on the same principle potash is good for tobacco crops, and magnesia and lime cause a development of sugar in the sugar cane. There is no doubt that better results would be obtained in growing medicinal plants if attention were directed to a proper system of applying suitable fertilising agents to the crops.

With regard to the Nilgiris, it is known that there is a deficiency of lime and phosphoric acid in the soil, and an addition of these two ingredients has always proved beneficial to the local tea, coffee, and cinchona estates.

For the purpose of observing the action of these substances on the growth of jalap tubers, and the effect they would have of increasing the active principle, an experiment was made in which some powdered mineral phosphate and superphosphate were employed. Into one box was placed some ordinary soil of poor quality; in the second the soil was mixed with some mineral phos

phate in the proportion of 10 cwt. an acre, and in the third the soil was mixed with superphosphate in the same proportion. In each of these boxes was planted a small jalap tuber, and the boxes were left undisturbed for nine months. The plant that grew from the tuber in the third box was much taller than that in the second, and the plant in the second was finer than that in the first. The subterranean portion of the plants corresponded with the aërial growth, for when they were taken up the tubers were found to have developed remarkably in the manured soil.

The respective weights were as under:—

	Fresh.	Dry.	Per cent. of Water.
No. 1. Unmanured	32	7·62	76·2
,, 2. Phosphate	85	22·44	74·2
,, 3. Superphosphate	228	54·20	76·2

The percentage of resin was then estimated in the dry powder with the following results; the amount of ash was also taken in each sample:—

	Resin.	Ash.
No. 1	10·49	4·95
,, 2	11·97	4·38
,, 3	13·79	4·30

Considering that the tubers were taken up before they were fully grown, and before they were of the size usually seen in commercial circles, the result of the application of phosphatic manure was most satisfactory, not only increasing the weight of the tubers, but also in increasing their value in the amount of active principle.

BOTANIC GARDENS OF THE WORLD.

INTRODUCTORY.

It is proposed to publish in the *Pharmaceutical Journal* a series of articles on the principal botanic gardens of the world, and their position in relation to science and education. The propriety of presenting such a series can hardly be challenged when consideration is given to the original relation existing between botany and pharmacy, and to the methods of study of the two subjects, either independently or in connection with each other.

That the science of botany had its origin in the practice of the art of medicine cannot be doubted. The earliest botanical works that were produced in mediæval times consisted largely of the names and descriptions of various plants, or simples, which yielded remedies for different disorders. The early botanists were herbalists, whose chief aim was to identify the plants used in medicine by the old Greek physicians and to extend the knowledge of the resources afforded to the apothecary by the plants growing wild in Nature. It was only subsequently and, indeed, in comparatively recent times, that this economic interest ceased to be the basis of botanical research, and plants came to be studied with a view to elucidating their own natural relationships and individual peculiarities. The close relationship between botany and medicine is shown by the fact that botanic gardens were originally devoted to the cultivation of those plants only from which particular remedies were derived. Not that the supply of these was the only point aimed at, though no doubt this object was not overlooked. The garden was originally also scientific, so far as science was pursued in those old times. Following on the purely economic cultivation of the plant, the art of detailed description was pursued. Attention was directed to the form and general configuration of the medicinal plant to ensure identification of it by others who had no access to the garden, but who might find the plant elsewhere. So by gradual steps the way was opened out for the scientific classification which is the special feature of the taxonomy of the present day, and the mediæval herbalist gave place to the botanist as that term is now understood, just as economic or medical botany receded into the background. From the empirical efforts of the earlier writers there was a gradual evolution of a true science; the economic side of research gave place to the wider and more deeply interesting investigation of the general problems of vegetable life which is leading by no uncertain steps to the recognition of the fundamental identity of living substance, whether met with in the form of plant or animal.

In this later development of the science, botanic gardens have played again no insignificant part. Indeed, the study of the methods on which the ancient gardens were laid out, and the steps by which they have gradually been modified till such results have been reached as may be noted at Kew, Montpellier and Buitenzorg, afford at once an illustration of, and a commentary upon, the development of botanical science itself. A great advance was achieved when medicinal plants began to be grouped together on the basis of such similarity of form and structure as indicated, however imperfectly, natural relationship and probable descent. This led to still greater results when the study of detailed anatomy began, a study which has led continuously to the investigations of the present day, which take cognisance not only of structure, but of physiology and the relation of the vegetable organism to its environment.

The influence of the botanic garden upon the gradual evolution of the science of botany is thus apparent; at the same time the importance of the garden in the pursuit of the details of both structure and function can hardly be over-estimated. The universal recognition of this fact can be seen in the establishment of gardens almost universally in connection with all large institutions for botanical research. The close alliance between the two has perhaps been more appreciated on the continent of Europe than in our own country, but it is noteworthy that now the Universities of Oxford, Cambridge, Edinburgh, and Glasgow and the National Institution at Kew show them both existing side by side. In the olden times the garden was intimately associated with the Herbarium, in which the dried specimens were permanently preserved and comparison between the living and dead forms rendered possible. So far as science went, the garden was the means of its extension. With the new departure, made when the importance of the study of the details of the individual plant was recognised, and it began to replace that of natural relationships based only upon outward form, the rival to the herbarium—the laboratory—sprang up, and now in all well-ordered institutions the three exist side by side, each playing its own part in the development of botanical science, and all working harmoniously towards the common end.

As an instrument of education the importance of the garden is very great. The study of botany cannot be pursued advantageously from books alone; indeed, the text-book ought to be considered quite subordinate to the living specimen. A study so dependent upon natural materials must ordinarily be greatly hampered by the difficulty of procuring the different specimens required, whose distribution is so varied that only a very imperfect supply is ordinarily accessible to the average student. By the judicious use of the botanic garden this difficulty is very largely overcome, and study on the right lines is rendered possible. The same considerations apply, of course, with even greater force to the position of the teacher, who is enabled to direct his students, unhampered, to the living forms, and to secure that they shall be presented in such a way as to render possible a study not only of form and structure, but of physiological peculiarity and of mode of life.

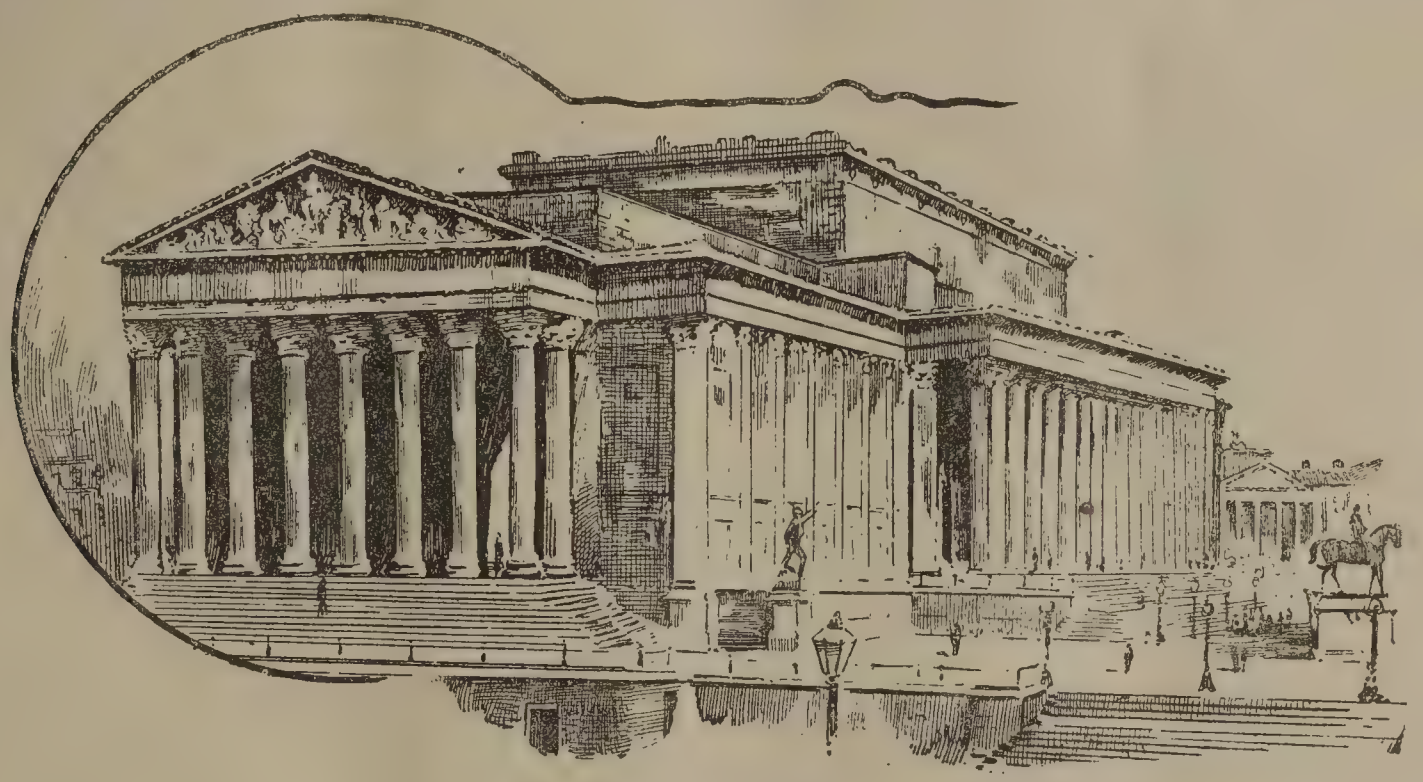
LIVERPOOL REVISITED.

NOTES FOR VISITORS AT THE APPROACHING CONFERENCE OF PHARMACISTS.

THE CITY ARMS.

INTRODUCTORY.

LIVERPOOL gave a sympathetic reception to the British Pharmaceutical Conference in its infancy—twenty-six years ago—and welcomes that body with equal heartiness now that it has come to years of maturity. Meanwhile, however, this leading British sea-port town has become a city: its population has increased, its trade has developed, and its boundaries have been extended enormously; and whilst the pharmaceutical visitors on the present occasion may rest assured that the old spirit of hospitality remains unchanged, they will find themselves face to face with that newer aspect of things, due to the tireless spirit of progress which has so greatly transformed the busier centres of human activity during the last quarter of this wonderful and rapidly-closing century. The following brief account of the place and its fortunes, and guide to the Conference proceedings, should therefore prove acceptable to those who come to the birthplace of Gladstone, Horrocks, Jevons, Roscoe, and Santley, as old acquaintances, no less than to those who are paying their first visit to the great Lancashire seaport.



ST. GEORGE'S HALL, LIVERPOOL.

RISE AND PROGRESS OF THE CITY.

Liverpool, though knowing nothing of the Romans and their occupation of Britain, yet boasts a fairly respectable antiquity. Situated on the right bank of the estuary of the Mersey (Mœresea), which here runs almost due north and south, the city is about three miles from the open sea, and is bounded on the north by Bootle. Under the Saxons the site formed part of the province of Deira, and the river Mersey at that time formed the northern boundary of the ancient kingdom of Mercia, dividing it from Northumbria. Norsemen settled on both sides of the river during the Danish irruption of the eighth century; and after the Conquest the site formed part of the fief granted to Roger de Poitou, of the great Montgomery family. After numerous forfeitures and re-grants the land came into the possession of King John, who erected a castle there and founded a town to which he granted the following charter, in 1207:—

Charter of King John (Translation).

The king to all who may be willing to have burgages at the town of Liverpul etc. Know ye that we have granted to all who shall take burgages at Liverpul that they shall have all liberties and free customs in the town of Liverpul which any free borough on the sea hath in our land. And we command you that securely and in our peace you may come there to receive and inhabit our burgages. And in testimony hereof we transmit to you these our letters patent. Witness, Simon de Pateshill, at Winchester, the 28th day of August, in the ninth year of our reign.

The castle existed until about 1731, and appears to have been erected upon the bank of the pool or creek of the river. As was usual in such cases the town grew up around the castle, the townspeople being under the protection of its possessors, and in time the name applied to the creek was adopted by the town. If local traditions be credited, the name Liverpool is simply compounded from the name of a kind of cormorant—the "Liver," and the word "pool." Others, again, say that "Liver" refers to a kind of sea-weed, and this opinion, if not the previous one also, finds expression in the arms of the city, in which a cormorant is represented carrying in its beak a branch of the sea-weed called "Laver." Amongst other derivations that are favoured are the Cymric Llyvrpwl, meaning "the expanse at the pool," or "the pool at the confluence"; Litherpool, meaning in local dialect, "the lower pool"; and "Lide" or "Lithe," an old Gothic word for the sea. Most authorities, however, regard the derivations referred to as too far-fetched, and though the balance of probability seems to incline in favour of the view that an old local family named Lever gave its patronymic to the creek, which therefore became known as the "Leverpoole," and subsequently gave its name to the town, the difficulty of tracing this family back so far renders the supposition as doubtful as any other. A few of the old-time spellings of the

name of the town are Leverpoole, Liverpol, Lyverpole, Lyvrepole, Lyverpoole, Lithepole, Litherpoole, Lytherpul, Lyrpole, Lyrpul, Lirpoole, Leirpool and Lerpol. No such name appears in Domesday Book, but the place was probably identical with the Esmedune or Smedune there mentioned.

Though the privileges of the town were extended by charters granted by successive English monarchs, the place seems to have progressed but slowly. Thus, in 1338, what is now the largest port in the world—and including Birkenhead, the second largest city in the United Kingdom—was required by Edward III. to provide one vessel only, with six mariners, for his war with France, whereas twenty-four were required from Bristol and sixteen from Hull. Again, in 1565, the inhabitants numbered 840 only, whilst the whole shipping of the port consisted of fifteen vessels, which had a total capacity of 259 tons and were manned by 83 hands, all told. During the civil war, the town was held for the Parliament, and, after sustaining three sieges, was taken by Prince Rupert in 1644.

THE EXCHANGE, LIVERPOOL.

Three years later it was made a free port, and gradually progress became more marked. Chester and Bristol were soon surpassed by their younger rival, and at the close of the seventeenth century the population of the town had increased to 5145, and the shipping to a fleet of more than 100 vessels, with an aggregate of nearly 9000 tons burden.

But the true rise of Liverpool's commerce dates from the Restoration, at which time its trade was chiefly with Ireland, France, and Spain. Fish and wool were then exported to the Continent, and wine, iron, and other commodities imported. Potatoes are said to have been first grown in this country at Formby, about twelve miles to the north of Liverpool, a quantity having been washed ashore there from a wreck, and at the present time Formby is noted for its "tubers." The African trade of Liverpool became considerable during the eighteenth century, and trade with the West Indies and North American colonies also helped to swell the tide of material prosperity. Then came the wars with France and the fitting out of numerous privateers, but the greatest impetus of all was coincident with the rise of the cotton industry in Lancashire. Added to the effects of the mechanical revolution brought about by Hargreaves, Arkwright, Crompton and others, came increased foreign trade and augmented inland business, the last being due to the opening of the Bridgewater Canal. Subsequent development has been aided by the introduction and increasing use of railways, steamships, etc., and at the present time the city of Liverpool is credited with one-fourth of the imports, more than two-fifths of the exports, and nearly one-third the entire foreign trade of the United Kingdom.

LIVERPOOL OF TO-DAY.

Perhaps the most important outcome of the great activity involved has been the gradual development of the magnificent dock system of Liverpool and Birkenhead. Commencing with the construction of the Old Dock in 1700, the accommodation for ships has been gradually extended so that the total area of the docks is now about 545 acres, and the total length of quays extends to 35 miles or more; whilst the capital invested in the Dock Estate of nearly 1600 acres is £17,088,683.

The diocese of Liverpool was created in 1880, and the town then became a city by Royal Charter. It covers nearly 11,000 acres, the total rateable value approaches £4,000,000, and the population is about 700,000, the city being more densely populated than any other city or town in the United Kingdom. Seven railways are in direct communication with Liverpool, and there are five tunnels under it, including the Mersey tunnel, which connects Liverpool and Birkenhead, and measures 1230 yards long. Another great local undertaking is the water supply, obtained from Lake Vyrnwy, the largest artificial sheet of water in existence. This is 45 miles away, a Welsh valley having been dammed up and a dried-up primeval lake restored to its original condition, in order that Liverpool might not thirst or go unwashed. There are many industries in the district—including

ship-building yards, iron and brass foundries, chain-cable and anchor smithies, engine works, tar and turpentine distilleries, rice and flour mills, tobacco, cigar, and soap manufactories, breweries, sugar refineries, roperies, glass works, chronometer and watch manufactories; but the chief pre-eminence of Liverpool itself is as a distributing centre, and the most powerful impression of the city's vast commercial importance is obtained on approaching the port from the sea. To quote a local guide, the noble estuary, where the greatest of ocean liners and the smallest of coasters lie alike in perfect safety; the miles of docks, crowded with shipping; and the miles of great warehouses filled with products of all the countries of the world, combine to give a much more just idea of the colossal magnitude of the trade done in this renowned port than can be obtained by the visitor who comes to the city from the land side.

Standing on the huge floating landing stage—which is two-fifths of a mile long, and connected with the quay by eight bridges—the visitor finds himself in the midst of a continuous stream of people, and witnesses the immense traffic of the numerous river ferries and ocean-going steamers. Birkenhead, with its dock, lies opposite, about a mile distant, the Liverpool docks extend to right and left for a distance of some seven miles, and the Overhead Electric Railway traverses their entire length. This railway is the first of its kind in Great Britain, and cost £85,000 per mile. The electricity is generated at a central station, and the carriages are lighted by electricity and fitted with Westinghouse compressed-air brakes. The most comfortable and expeditious way of taking a general survey of the docks is from a train on this railway. The Alexandra dock, with an area of 44½ acres, situated in Bootle, a township of 50,000 inhabitants to the north of Liverpool, is the largest dock "in creation," having twenty-two loading berths for the largest ships afloat; the Waterloo and Alexandra docks are remarkable for their corn warehouses with hydraulic grain-hoppers, holding about a ton each; and the Prince's dock, close to the landing stage, is interesting as being used mostly by sailing vessels from America and China.

So far as the first impression of the city itself is concerned, the visitor who arrives by the London and North-Western Railway has the advantage over those who come by sea. Stepping into Lime Street he first notices St. George's Hall, which has been well described as the greatest triumph of architectural art in the city, and an edifice of which a nation might be proud. It is separated from the London and North-Western Railway Hotel by a large open space capable of containing nearly 100,000 people, and has the general aspect of an oblong Corinthian temple with a series of elegant sculptured panels of allegorical subjects in bas-relief on the exterior. The Great Hall is the main feature of the interior, and at each end of this is a Hall of Justice. Opposite the western side of the Hall are the Free Public Library and Museum, the Picton Reading Room and Lecture Hall, and the Walker Art Gallery, where a reception will be held by the President of the Conference and Mrs. Martindale, on the evening of Monday, July 27. This building is classical in style, of the Corinthian order, and presents a very beautiful front, extending about 180 feet. It contains four large galleries, the space sufficing for an annual autumn exhibition of selected pictures, in addition to the permanent collection, and Liverpool may thus be regarded as possessing one of the finest art galleries in the kingdom.

FREE PUBLIC LIBRARY, PICTON READING ROOM, AND WALKER ART GALLERY, LIVERPOOL.

University College is the premier educational institution in Liverpool, and like the Royal Infirmary close by, is mainly built of brick, with terra-cotta dressings. It consists of four distinct buildings—the chemical laboratories, the engineering laboratories, the Victoria Buildings, where the arts find a permanent home, and the old building in which the work of the College was first commenced, now devoted to the sciences. A large medical school is also attached to the College, which is thus fully equipped for university purposes, and constitutes a worthy component part of Victoria University. Other buildings of interest are the Town Hall, the earliest public building in Liverpool; the municipal offices, in Dale Street; the Exchange, which forms three sides of a quadrangle, and adjoins the Town Hall on the north side; the Revenue buildings; and the Philharmonic Hall. There are theatres, banks, markets, baths, and parks in abundance; tramways run in all directions throughout the city and suburbs; handsome buildings meet the eye on every side, and the brilliant business streets are second to none in the kingdom. But enough has been said for the purpose of this compilation, and those who would know more concerning the details of the handsome city which it is this year the good fortune of the Conference to visit, are referred to the excellent local guide-books, the special business of which is to provide such information.

Pharmaceutical Education in Liverpool.

When the idea of founding a pharmaceutical association at Liverpool was first mooted it was intended to carry out one of Jacob Bell's original ideas and establish a branch of the Pharmaceutical Society in the town. As a matter of fact, the Liverpool Chemists' Association, started in 1849, was to a considerable extent an offshoot of the parent Society, fostered in its infancy by the

great founder, Jacob Bell himself, and it is not surprising, therefore, to find that from the outset one of the chief objects of the Association has been the promotion of pharmaceutical education. A library and a museum were established, arrangements were made to have a portion of the local Botanic Gardens devoted to the cultivation of medicinal plants, classes were commenced in the laboratory of the Royal Institution for the practical study of chemistry, and provision was made from time to time for the delivery of lectures on subjects having a direct bearing upon pharmacy, and especially chemistry. Towards the end of 1885, Mr. E. Davies, the then Lecturer on Chemistry, having resigned his position, it became necessary to make fresh arrangements, and after careful consideration the Council of the Association decided to enter into an agreement with Mr. J. S. Ward, who had some three years previously started the Liverpool School of Pharmacy.

Mr. Ward drew up a synopsis of the curriculum he proposed to adopt, and submitted the same to the Council, assuring the members that this would at all times be carried out, and that the School would be open to the inspection of members of the Council at any time. This offer was approved, and in January, 1886, the following resolution was adopted at a meeting of the Council:—"That Mr. Ward be allowed to add the following words to his advertisements:—'The curriculum of this School (the Liverpool School of Pharmacy) has been submitted to the Council of the Liverpool Chemists' Association, and is approved of and recommended by that body.'" Thus the School developed from a purely private establishment into an institution publicly recognised and recommended by the local association, with the object of enabling students to obtain a thoroughly efficient pharmaceutical education in Liverpool. A committee of inspection was appointed to visit the School from time to time, and otherwise control the course of study.

The classes gradually developed in extent, and more than once it became necessary to seek larger premises, to meet the increasing demand for accommodation. After Mr. Ward's death, about the end of 1892, the work of the School was continued by Mr. R. C. Cowley, the present Principal, and at a meeting of the Council of the Liverpool Chemists' Association it was decided to continue the arrangement with Mr. Cowley which previously existed between it and Mr. Ward. The results appear to have been highly satisfactory, for in the inaugural address delivered by Dr. Symes at the opening session of the Midland Chemists' Association, held at Birmingham on November 2, 1893, he said that in the Liverpool School of Pharmacy the teaching was thorough, and that from his experience of some of the students whom he had subsequently employed as assistants, the knowledge imparted was not superficial. He visited the School occasionally without previously intimating that it was his intention so to do, and he was always impressed with the idea that honest, earnest work was going on and that there was full sympathy between teacher and students.

The present school building, 6, Sandon Terrace, was entered upon during the summer of 1894. The rooms are all fitted up with the latest improvements, lofty, spacious, well-lighted, and well-ventilated, whilst having the additional advantages of absolute quietude and perfect sanitation. The courses of study cover all that is required for the Minor and Major examinations of the Pharmaceutical Society, and special care is taken to teach all the subjects as practically as possible.

THE OVERHEAD ELECTRIC RAILWAY, LIVERPOOL.

But the highest aim of advanced pharmacists is to obtain university recognition for the institutions in which pharmaceutical students receive their scientific and technical instruction, and leaders of the craft will therefore rejoice that a notable addition to the educational facilities of the city will be formally inaugurated in October next, when special courses of instruction for pharmaceutical students will be commenced by the Council and Medical Faculty of University College, and a second School of Pharmacy thus be associated with Victoria University. These courses have been arranged to meet the requirements of both Minor and Major students, and the Manchester Pharmaceutical Association Scholarship may be held in the new school. The syllabus has apparently been based on that of the School of Pharmacy, London, and shows evidence of extreme care having been taken to meet the needs of pharmaceutical students. The teaching staff of the new School is as follows:—Chemistry: Professor J. Campbell

Brown, D.Sc., and Drs. Bailey, Schryver, and Francis; Physics: Professor Oliver J. Lodge, D.Sc., F.R.S., and Dr. Howard; Botany: Professor R. J. Harvey Gibson, M.A., and Mr. Jones; Materia Medica: Professor W. Carter, M.D., and Mr. Marsden; Pharmacy: Mr. Prosper H. Marsden, Ph.C.

The laboratories of University College are acknowledged to be amongst the best equipped in the kingdom, and they have been rendered more complete recently by the opening of the new botanical laboratory, whilst an extra chemical laboratory is in progress of construction. Students will also find the botanical museum, herbarium, and cabinet of pharmaceutical preparations available for practical work and exercise in identification. Special attention will be devoted to the histology of drugs and the use of the microscope; and the practical pharmacy class is to be held in the dispensary of the Royal Infirmary, which is fully equipped for the systematic study of the various processes involved in the manufacture of galenical preparations. The Pharmaceutical Society has recently voted a sum of money to provide a collection of materia medica specimens to be kept at University College, where they will be available for use by all registered students of the Society. Collections of specimens have also been presented by local firms—Messrs. Evans, Sons and Co., Messrs. Clay and Abraham, and Messrs. Symes and Co. No provision has yet been made for evening classes, but doubtless special arrangements could be made in that direction if the necessity of such classes were felt. Pharmacists must recognise, however, later if not sooner, that their scientific knowledge and technical training are essentials and not extras. Classes that can be attended without interference with business arrangements tend unfortunately to encourage the idea that the acquirements rendered compulsory by the Pharmacy Act are ornamental and more or less unnecessary. The sooner, then, the necessity is recognised of sparing sufficient time from the practice of pharmacy to become properly qualified, and not merely prepared to pass examinations, the better will it be for pharmacy, and the better also for pharmacists and their clients.

NATURAL HISTORY OF THE LIVERPOOL DISTRICT.

The general aspect of the Liverpool district is somewhat flat and undulating. The country is rather hilly towards the south-east and on the Cheshire side of the Mersey, but extending towards the north is a series of sandy low-lying tracts of land, bordered on the sea-side by sandhills, whose ever-shifting surface is partly held together by various species of grasses and sedges. The geological formation upon which Liverpool stands is the New Red Sandstone, there being no coal measures nearer than Prescot, eight miles to the east, and Parkgate, in Cheshire, on the Wirral peninsula. In the overlying stratum of clay near Storeton Hill, on the Cheshire side, the impressions of tortoises, crocodiles, and other fossil remains have been found, including those of the Labyrinthodon, a giant Batrachian, and an extraordinary creature, half reptile, half bird, named by Professor Owen the Rhynchosaurus. The various cuttings which have been made in the course of constructing new docks and railways on both sides of the Mersey have been the means of considerably extending the knowledge of the geological history of the district, with which students may obtain an acquaintance by a visit to the collections contained in the Brown's Museum and the Museum of the Liverpool Royal Institution.

The south-east, south, and Cheshire sides are well wooded, but to the north the only woods worthy of the name are those near Little Crosby and Ince-Blundell, though formerly there must been considerable forests where the shores of Crosby and Formby now are, for below low-water mark tracts of peat containing the remains of large forest trees are met with. To the botanist there lies within a radius of some fifteen miles round Liverpool a veritable "happy hunting ground," whose flora is one of the most numerous in varieties of any in the kingdom, containing as it does many rarities which, to use an Irishism, are here of comparatively frequent occurrence. In the grassy hollows of the sandhills between Crosby and Southport the grass of Parnassus, *Parnassia palustris*, grows in great profusion, together with the sea spurge *Euphorbia paralias*, and the Portland spurge, *E. portlandica*. The round-leaved wintergreen, *Pyrola rotundifolia*, var. *maritima*, is likewise met with about Hightown, together with the sea holly, *Eryngium maritimum*, and the parasitic yellow *Bartsia viscosa*, together with the yellow bird's nest, *Monotropa hypopitys*, which grows epiphytically upon the roots of a variety of dwarf willow, *Salix repens*, plentiful on the Crosby sandhills.

A sweet-scented variety of soapwort, *Saponaria officinalis*, var. *puberula*, known from the common soapwort by its scent and by having the calyx covered with short hairs, is also found near Crosby, and this is the only locality for it. The evening primrose, *Œnothera biennis*, and *Sisymbrium pannocum*, although not indigenous, are both well established here, the former being met with also on the Cheshire side of the Mersey on the New Brighton sandhills.

Turning to the Cheshire portion of the district, the Wirral peninsula, with its salt marshes, hilly ground and clayey soil, affords us quite a different class of plants, for example, *Statice auriculæfolia*, *S. limonium*, sea wormwood, *Artemisia maritima*, the Isle of Man cabbage, *Brassica monensis*, English scurvy grass, *Cochlearia anglica*, and Danish scurvy grass, *C. danica*. The ponds and ditches are resplendent with the white flowers of the frog bit, *Hydrocharis morsus-ranæ*, and the pale purple blossoms of the water violet, *Hottonia palustris*, whilst on Little Hilbre Island, at the mouth of the Dee, *Thalictrum dunense* and the sea spleen-wort, *Asplenium marinum*, may be seen, though this latter is rapidly becoming scarce since the cockle gatherers have discovered that it pays them better to gather it than to follow their ordinary occupation. Amongst other rarities may be cited the marsh gentian, *Gentiana pneumonanthe*, the broad-leaved pepperwort, *Lepidium latifolium*, the sand garlic, *Allium scorodoprasum*, the water soldier, *Stratiotes aloides*, once plentiful in a pond at Bootle, but now extirpated by the advance of bricks and mortar, and the *Cotula coronopifolia*, this latter, of course, introduced, but now quite at home in its present location. Several interesting plants have quite disappeared from the district, thanks to the increase of buildings and the too frequent attentions of the "enthusiastic collector," and now are only to be found in old herbaria; this is notably the case with *Erythræa latifolia*.

From these necessarily somewhat scanty particulars, visitors to this year's Conference may gather that Liverpool is, botanically speaking, worthy of consideration, and such of them as may feel inclined to venture on excursions in quest of specimens for their herbaria may rely upon having plenty of material to work upon. The Botanic Gardens, opened in 1836, contain a very good collection of plants laid out in good taste and well-kept, though the arrangement from a botanist's point of view is somewhat confused. This, however, is likely to be soon remedied, owing to the exertions of Professor Harvey Gibson, of University College. The conservatories are extensive and well supplied with economic plants. The herbarium of the late Mr. Lomax, now in the possession of the University College authorities, and the fact that the Pharmaceutical Society's silver medal was last year awarded to a Liverpool student's collection are additional evidences of the botanical possibilities of the district.

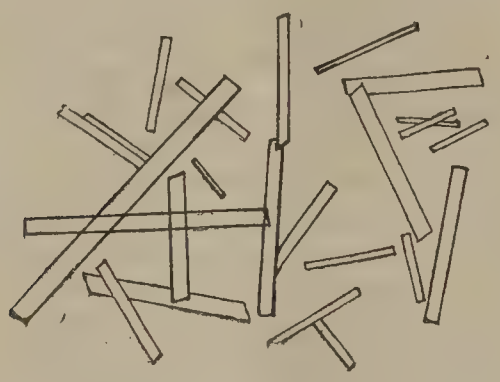
THE INSOLUBILITY OF COCAINE IN VASELINE AND LARD.

BY C. EDWARD SAGE, F.C.S.

Being requested to make a 5 per cent. solution of cocaine in adepsine oil recently, it was found that the alkaloid was scarcely soluble in that liquid except at the temperature of a water bath, and even then it took some time to dissolve, and on cooling the alkaloid crystallised out again.

The 'Extra Pharmacopœia' states that cocaine is soluble 1 in 20 of vaseline, and I have many times prepared such an ointment, but the fact that the alkaloid crystallised out from adepsine oil when dissolved in it in the same proportion suggested the microscopical examination of some "vaseline-cocaine" 1 in 20, with the result that it was found to consist of a mass of minute crystals interspersed with vaseline.

The accompanying drawing shows the appearance of a thin layer when examined by means of a ⅛-in. objective.



Crystals from "Vaseline-Cocaine," 1 in 20. (⅛ inch objective.)

The vaseline used for preparing the ointment showed no crystals when examined in the same manner, and a chemical examination of the cocaine used showed it to be pure.

An ointment was made of the same strength with lard, and directly it was set it was examined microscopically, and showed no signs of any crystals of cocaine, but after standing two hours the alkaloid began to crystallise out in well-defined crystals.

A solution in olive oil and one in castor oil was also made, and these were found to be perfectly stable.

From these results it seems that neither vaseline or lard is a suitable solvent for the preparation of an ointment of cocaine, and that the idea that such a preparation was better than one containing the hydrochlorate dissolved in a little water and rubbed up with the fat is fallacious.

TANNIGEN IN INFANTILE DIARRHŒA.—Escherich has further experimented with this new compound, and confirms the favourable reports of Moncorvo and others, already recorded with the drug. He finds that it is particularly serviceable in those cases where a considerable amount of mucus is excreted. It is less active where there is a copious serous discharge due to inflammatory enteritis, and where the upper portion of the digestive track is affected. The value depends not only on its astringency but also on its markedly antiseptic properties and the readiness with which it forms insoluble compounds with alkaloids and toxines. In sub-acute or chronic enteritis of the large intestine, no other remedy has given such rapid cures as tannigen. Care, however, must be taken not to abandon its use too soon or a relapse may occur. Up to a year and a half, 25 centigrammes was given four or six times a day; to older children, 50 centigrammes was given (*Rev. de Thérap. Med. Chirurg.* lxiii., 218, after *Thérap. Woch.*).

NOTES IN THERAPEUTICS AND PHARMACY.

BY SIR JAMES SAWYER, M.D. LOND., F.R.C.P., F.R.S. EDIN.,
Consulting Physician to the Queen's Hospital, Birmingham.

I.—BORAX SOAP.

I am persuaded that it would tend to the precision of the art of medicine and to the advancement of pharmacy, no less than to accuracy in the exhibition of our remedies and to better reliability of therapeutic information, if medicated soaps, which are now largely used by the profession in the treatment of affections of the skin as well as purchased and employed, often ignorantly, by the general public, were prescribed with precise directions to the compounder in our authoritative magistral formula. Surely in this matter, as in all cases of medicinal prescribing, the interests alike of the patient, of medicine, and of pharmacy are better served by the indication of remedies in magistral formulæ which are especially written for the treatment of each particular case of disease, more difficult and troublesome as such procedure may usually be, than by the "ordering" of ready-made and often proprietary compounds, which are not seldom of doubtful composition, and the recommendation of which degrades the important art of prescribing, and tends, in ways which will be readily appreciated, both to the professional deterioration of the physician and to the commercial disadvantage of the dispenser. The sapo durus of the British Pharmacopœia, which is a pure and neutral hard soap, furnishes an excellent basis for magistral medication by the addition of remedies designed for application to the skin, and prescribed according to the particular requirements of individual cases; the added drugs can be well incorporated with this basis *secundum artem* by a competent pharmacist. For example, in a case in which a soothing saponaceous detergent is desired, the following prescription may be given: sodii biboratis, 10 per cent.; saponis duri, 90 per cent.; olei rosæ, one minim to one ounce; *misce, fiat sapo secundum artem.* In some cases a weaker preparation may be used containing only 7½ per cent. or even 5 per cent of borax. I have prescribed this application with much success, especially in the slighter cases of skin diseases affecting the face. I need not remind my professional brethren of the numerous therapeutic uses of borax as an external remedy. Dr. Lauder Brunton has given a good summary of them.*

II.—ARSENIC IN GASTRALGIA.

Further observation in practice has confirmed my favourable opinion of the curative efficacy of arsenic in the various painful neuroses included under the name gastralgia. I have already laid before the profession my earlier experience in this subject.† Romberg's well-known description of gastralia is classical. He distinguished two forms of the malady—gastrodynia neuralgica, which he held to be hyperæsthesia of the gastric branches of the pneumogastric nerve, and neuralgia cœliaca, which he attributed to hyperæsthesia of the solar plexus. Clinical experience confirms the views of Niemeyer and of Henoch that this distinction is difficult and of doubtful utility in practice. Gastralgic affections, severe and slight, are rare in hospital practice, and frequent amongst private patients, especially in those of nervous temperament. I need scarcely observe that for obvious reasons the diagnosis of gastralgia is one which should neither be lightly made nor negligently maintained. But pain arising in the stomach when the organ is empty and relieved by the ingestion of food is almost diagnostic, as the late Dr. Wilson Fox taught,‡ of its nervous nature and origin. With due

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* 'Text-book of Pharmacology, Therapeutics,' etc.

† The *Lancet*, August 13, 1887, and 'Contributions to Practica Medicine,' 1891.

‡ Reynold's 'System of Medicine.'

regard to the casual concomitants and antecedents of gastralgia arsenic cures the disease. It is best to give the drug in a pilular form. I exhibit a twenty-fourth of a grain of arsenious acid made into a pill with two or three grains of some tonic vegetable extract, such as gentian, three times daily half-way between meals. Scarcely any other medicinal treatment is needed in cases of moderate severity, and the use of the remedy should be continued for some weeks. In severer cases I use counter-irritation to the epigastrium of duly proportioned activity. I have usually found a full and varied dietary suit gastralgic patients far better than a restricted "dyspeptic" regimen. It is in such cases that Trousseau's maxim is so true—that we should know what a patient does eat before we advise him upon what he may feed.

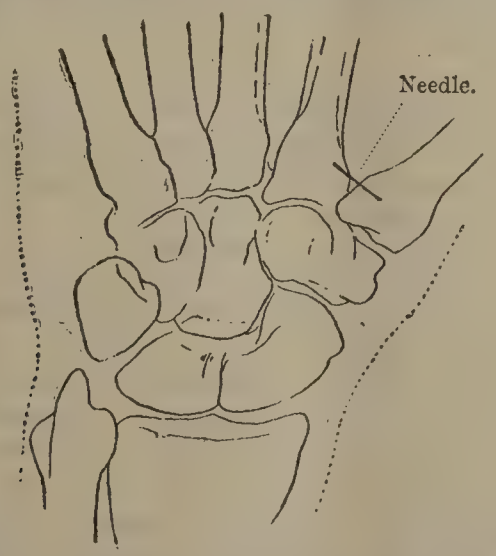
III.—Glycerine in Certain Affections of the Stomach.

Some years ago Dr. Sidney Ringer recommended, I think in one of the medical periodicals, the administration of glycerine by the mouth in certain affections of the stomach. I regret a reference to his paper is not near my hand. Acting upon his suggestion I have since treated many cases of painful gastric digestion, such as are usually attributed to sub-acute or chronic catarrh of the gastric mucous membrane, with glycerine with satisfactory results. So far as I have seen this employment of glycerine is not widely extended in professional practice, nor have I noticed further reference to it in our periodicals. The familiar routine seems to be a ringing of changes upon bismuth, alkalies, acids, and digestives. Many cases of gastric maladies of the kind I have indicated yield to glycerine; I give one drachm, a drachm and a half, and sometimes even two drachms, with a little of some simple bitter stomachic tincture, diluted to an ounce with water, thrice daily between meals.—*Lancet.*

RECENT WORK WITH THE RONTGEN RAYS.

BY LEO ATKINSON.

Since reading the paragraphs relating to *x*-rays, which appeared in the *Pharmaceutical Journal* for June 6 and 13, I have expected to find some explanation of the matters referred to, for as early as February needles in bone, bullets, etc., were readily photographed with ordinary Crookes' tubes, and a sketch from a print of a human hand taken by my son, showing the point of a needle (afterwards successfully removed) in bone and tissue, is here shown.—



Print of Human Hand, showing Needle imbedded in Bone and Tissue.

Two or three months ago we had a case of shots in bone, and found no difficulty in showing them, although four previous radiographs failed to show the slightest trace of their presence.

Sketches from prints of a number of objects having a wide range of density and opacity, are also shown in these cases, the exposure and development were identical, and the result, in a sense carries its own explanation. The wire running through the tooth-brush would have been still more distinct if of different metal, for it will be observed that the needle is very evident through the piece of copper foil. The circles are the lenses of an achromatic combination. One is readily penetrated, but the thick crown glass stops the ray; the copper foil is distinct through the thick bone-ring of a feeding-bottle, etc. The exposure of these

1.—Tooth-brush showing wire running through bone back, which is a little more than ⅛th inch thick. 2.—Part of gum lancet in tortoise-shell handle. 3—Aluminium disc, embossed, nearly as thick as a threepenny piece; the image of figures 1895 is due to the greater molecular density caused by compression. 4 and 5.—Component lenses of achromatic combination. The needle is very plainly defined under the print No. 4, whilst entirely blocked out by the crown, No. 5. 6.—Thinnest cover glass obtainable for comprisin. 7.—Unopened pea-pod, needle underneath. 8.—Copper foil about half thickness of aluminium disc. 9.—Ovary of poppy. 10.—Small mussel shell 11.—*Fucus vesiculosus*. 12.—*Lichen hybernicus*. 13.—Unopened flower buds of *Syringa*. 14—Strip of copper foil. 15—Stout bone feeding-bottle ring—copper foil underneath the ring, the combined opacities being well accentuated.

examples was forty seconds under ordinary conditions and with an old pattern tube; reflection or refraction have no part in the images formed. The exposure is too long for *Fucus*, pea, ovary of poppy, etc., and not long enough to show the needle through thick glass, but about correct for showing it through bone, etc. So far as rays of different character are concerned, they are well known, and very variable results can be obtained by altering the relations of electro-motive force and tube. From the foregoing I consider it is evident that the claim of new discovery resolves itself into misinterpretation of already observed phenomena. The idea first prevailing that *x*-rays were only capable of giving shadows is erroneous; there is no doubt that with careful exposure and manipulation these rays will exhibit the finest gradations of relative densities.

THE DRUGGIST AS A CHEMIST AND BACTERIOLOGIST.

For not a few years past the drug business has been undergoing a series of changes, a process of evolution, which to many thoughtful minds presages its ultimate and not far distant division into two distinct branches, the purely professional and the purely mercantile. It has suffered, and is suffering, from the diversion of lines of trade formerly considered to be particularly its own, to other merchants, and by them carried on at a very small margin of profit, not sufficient to afford adequate returns to the druggist, who must look upon this side of his business as but an adjunct to his professional calling. He has been obliged to deal in sundries and various side lines to eke out the meagre income derived from prescription work

and ordinary dealing in medicinal articles. He finds, however, that these side lines and this mercantile trade do not adequately replace the loss he has experienced from the decrease in profits and the diversion of trade alluded to. He is finding out that as a matter of fact he is neither fish, flesh, nor fowl. He cannot be a merchant and dealer in sundries of all characters to the extent that is his competitor in other lines, and what with physicians dispensing their own remedies and the multiplicity of drug stores, the prescription branch is in many cases more purely a name than a reality He therefore finds placed before him the imperative demand that he make a choice, that he be either merchant or professional man.

Many druggists apparently have already made the choice, choosing to enter the field of active business competition and push the mercantile side of their vocation for all there is in it. We have in every city and large town drug stores which are eminently successful in a financial way. The various side lines, soda fountain, the cigar stand, sundries, managed with business acumen contribute each its quota to a very satisfactory total of business and profit, and, of course, incidentally they all serve to maintain and really increase the prescription trade. But there are many other stores so situated that methods of this character cannot be put in force, and success of this nature cannot be hoped for. These druggists see the time fast approaching when they must either decide to leave the business or manage it upon different lines and broaden their scope of activity as purely professional workers.

It is significant that of late this class of druggists have been strongly advised, not only by their pharmaceutical journals and by papers contributed to them by brother pharmacists and by physicians, but by laymen, to study those branches of science which are best calculated in this day and generation to make the pharmacist more truly what he should be, the common chemist of the common people, and a most efficient aid to the physician in all chemical work, such as the development of medical science to-day demands for accurate diagnosis and treatment of disease. The druggist is advised to equip himself as chemist to examine the food and water supply of the people, that the people may be protected against adulteration and sophistication of the former and the presence of deleterious and dangerous disease germs and products in the latter. But farther than this, he is urged to make himself necessary to the physician by reason of his ability to conduct the various examinations necessary to the correct diagnosis of disease, such as the analysis of the various excretory products of the body, and in particular the bacteriological examinations of morbid tissues and fluids upon which to-day the accurate diagnosis of disease so largely depends.

We believe that this advice is good, for in this direction opens a field of activity to the druggist of earnest aim in which he may approach more nearly his ideal of the position and nature of the true pharmacist. While according all due importance to the mercantile side of the drug business, it cannot be denied that this branch has been allowed to overshadow to some extent the professional, and it is well to bring to attention occasionally what are the real duties and obligations of the educated and trained pharmacist, the compounder and dispenser of agents for the alleviation of suffering and the cure of disease. In the confusion and worry incident upon the rush and competition of modern mercantile life some druggists may have lost sight of their higher obligations, for the question of bread and butter is apt to dwarf the significance of others when brought home to one's self. But the signs of the times point to an evolution and advancement along the line indicated, and we confidently believe that the druggist will find in the domain of chemical and bacteriological research not only an interesting but a profitable sphere of activity.—*Pharmaceutical Era.*

NOTES AND FORMULÆ.

Methods of Dispensing Ferropyrine.

For the treatment of simple chlorosis.—Ferropyrine, 60 centigrammes; syrup of orange, 20 grammes; distilled water, to 200 grammes. A tablespoonful three times daily. *For treatment of chlorosis complicated by dyspepsia.*—Ferropyrine, 60 centigrammes; dilute hydrochloric acid, 5 minims; soluble pepsin, 5 grammes; distilled water, to 200 grammes. A tablespoonful after each meal. *For chronic gastritis.*—Ferropyrine, 60 centigrammes to 1 gramme; simple tincture of opium (Ph. G.), 2 grammes; distilled water, to 200 grammes. Two tablespoonfuls every three hours. If a bitter tonic is indicated rather than a sedative, 10 grammes of the compound tincture of Colombo (Ph. G.) may be substituted for the tincture of opium in the above (*Nouv. Rem.*, xii., 147, after *Pharm. Zeitschrift*).

Sulphate of Zinc as a Preservative of Mucilage.

Dr. E. Vogel suggests the addition of a small proportion of sulphate of zinc to mucilage of gum arabic in order to prevent decomposition. Although the addition is said not to interfere with the adhesive property of the gum, the *Amateur Photographer* remarks that it would obviously be inadmissible in some cases where the gum is used for photographic purposes, on account of possible interference with the reactions that take place.

Phosphated Oil in Dentistry.

Phosphated oil is a sovereign remedy for removing violent pain in periostitis resulting from a carious tooth. The cavity should be cleaned, dried, and a few drops of the oil on cotton-wool packed in the tooth, and held in place by means of gutta-percha. The pain will vanish in a few minutes, and the plug can be kept in the cavity for days and weeks. The oil is prepared by dissolving one part of dried phosphorus in about eight parts of expressed oil of almonds (*Brit. Journ. Dent. Sci.*, xxxix., 268, after *Ohio Dent. Journ.*)

A Matt Black for Iron.

According to the *Revue Suisse de Photographie*, a matt black surface on iron can be obtained by the use of the following solution:—

Mercuric Chloride	2 parts.
Cupric Chloride	1 part.
Hydrochloric Acid	6 parts.
Alcohol	5 ,,
Water	50 ,,

The article is carefully cleaned and immersed in the above, or a brush may be used for its application, after which it must be well soaked in hot water. A second application can be given if the colour is not dark enough.

Celloidin as a Substitute for Collodion.

Dr. Williamson, in the *British Medical Journal*, advocates the use of a solution of celloidin as a substitute for collodion in dressing cuts, punctures, excoriations and deep cracks or chaps on the hands from exposure. It may be used for all the purposes for which collodion is used, the pellicle it forms being more tenacious and durable than that of collodion. The parts to which it is applied should be quite dry. The solution advocated contains—celloidin, 2 parts; pure ether, 15 parts; absolute alcohol, 15 parts.

Non-Poisonous Fly-paper.

Volatile oil of pepper, 1 part; bichromate of potassium, 5 parts; sugar, 15 parts; water, 60 parts; methylated spirit, 10 parts; dissolve the sugar and the bichromate in the water, and the oil in the spirit, mix and saturate bibulous paper with the solution (*Western Druggist*).

PHARMACEUTICAL JOURNAL.

A Weekly Record of Pharmacy and Allied Sciences.

ESTABLISHED 1841.

Circulating in the United Kingdom, France, Germany, Austria, Italy, Russia, Switzerland, Canada, the United States, South America, India, Australasia, South Africa, etc.

Editorial Office: 17, BLOOMSBURY SQUARE, W.C.

Publishing and Advertising Office: 5, SERLE STREET, W.C.

LONDON: SATURDAY, JULY 11, 1896.

THE PHARMACEUTICAL CONFERENCE.

The meeting of the British Pharmaceutical Conference, that will shortly take place for the second time in Liverpool, after an interval of twenty-six years, cannot fail to be interesting, on account of the opportunity it will afford of becoming acquainted with one of the most important centres of commercial and industrial enterprise in the Kingdom. The chemical operations carried on in the neighbourhood of Liverpool furnish many products with which the pharmacist is concerned in the daily exercise of his business, and on the occasion of the previous Conference meeting the visits to the works of Messrs. John Hutchinson, the Runcorn Soap and Alkali Company, and Messrs. Gossage were a source of great gratification, as giving an insight into the methods of manufacture on the large scale. Since that time such great changes have taken place in the methods of production then carried on that a study of the existing chemical works will be found to offer much scope for gaining useful information. Some particulars relating to these changes will be given in next week's Journal.

In addition to the attractions presented by Liverpool and the surrounding district, the lapse of time since the previous Conference meeting offers a favourable opportunity for comparing the position now occupied by pharmacists with the expectations then entertained as to the influence that would be exercised by the Pharmacy Act, then recently passed. In some respects those expectations have not been fully realised, in others the course of events has been quite unlooked for, though on the whole, the administration of the Pharmacy Act, especially within recent years, has afforded reason for satisfaction. But there is one very important requirement which has not be fully provided for—systematic pharmaceutical education, and it is remarkable that so little advance has been made in that direction.

The late Mr. Stoddart, in addressing the members of Conference, as President on the occasion of the former meeting in Liverpool, spoke of the Pharmacy Act as being then too recent to have produced much beneficial effect upon the pursuit of pharmacy as an occupation for procuring the means of subsistence. He suggested that, although some advance had been made towards the objects contemplated by William Allen and Jacob Bell, the necessity of enduring a little more nursing would still have to be accepted before those objects could be realised.

As an indication of what was meant by that remark, reference may be made to the resolution passed by the Council of the Society in September, 1870, inviting the Conference to bring forward the subject of pharmaceutical education in the provinces for discussion at the Liverpool meeting. The attention that had then been directed to the subject of provincial education by Mr. Schacht may be regarded as having been an indication of desire to cultivate in the minds of chemists the idea that education is the only basis on which their interests can be promoted. That was spoken of by the President of the Conference, in opening the discussion, as the circumstance which had probably led to the resolution being submitted to the Conference and to the drawing up of the statistical returns—which were published at the time in the *Pharmaceutical Journal* (see [3], vol. i., 310-330, *et seq.*)—showing what provision existed at different places for the instruction of apprentices and assistants.

It is especially interesting to turn to the discussion which took place on that occasion, though a feeling of astonishment must be awakened by finding that so little progress has been made towards realising what was then admitted to be essential. Mr. Sandford, who was present in the position of President of the Pharmaceutical Society, was by invitation the first speaker. While declaring his own desire to promote education in the provinces, he urged that in his official position he rather looked to the Society to inaugurate a line of policy by agreement. He did not hesitate, however, to state the fact that while many masters would not teach their apprentices the essentials of their duties in connection with pharmacy, others could not do so. To that statement no objection was taken, nor, indeed, could it have been objected to, for it expresses the facts to which the defective knowledge of apprentices and assistants is to a great extent attributable, even at the present time.

Another still more striking point brought out in the discussion was that referred to by Mr. Alpass, viz., the insufficient Preliminary education of apprentices. That this would altogether be obviated, as was suggested by Mr. Sandford, if masters would agree only to take apprentices who had passed the preliminary examination of the Pharmaceutical Society, is perhaps questionable, unless the scope of the examination were extended, but in any case agreement to follow such a rule would have a wholesome effect. The circumstance that so many years ago the passing of the Preliminary examination was recognised as a necessary condition of receiving an apprentice comes as a surprise at the present time, when the same important desideratum is being insisted upon almost as if its necessity had only just been discovered. The late Mr. Abraham also spoke of the comparative failure of the endeavour made by the Liverpool Chemists' Association to provide instruction for apprentices, a story that has since been too frequently repeated at other places. Here, again, is to be found a clear recognition of the fact that providing means of instruction is not alone sufficient. An exceptional apprentice may employ his spare time in studying, but for the majority the compulsory attendance at lectures and courses of practical instruction is indispensable. It is so in regard to both apprentices and masters, in order that apprentices may have no option in the matter, while masters will be under the necessity of giving due time for study.

ANNOTATIONS.

Annual Meeting of the Society of Chemical Industry.—As announced in the Journal for April 25 last, this meeting will be held in London next week, under the presidency of Mr. Thomas Tyrer, F.I.C., and the proceedings will be inaugurated by a general meeting of the members, in the Hall of the Worshipful Company of Carpenters, London Wall, on Wednesday next, July 15, at 10.30 a.m. The presidential address will then be delivered, and the Society's Medal presented, after which the members will be entertained to luncheon by the Committee, at Cannon Street Hotel. Subsequently, the cold storage and refrigerating machinery of the Colonial Consignment and Distributing Co., Ltd., will be open to inspection, and a visit will also be paid to the brewery of Messrs. Coombe, Delafield and Co., Castle Street, Long Acre, whilst in the evening there will be a reception at the Mansion House by the Right Honourable the Lord Mayor. A whole-day excursion has been arranged for Thursday, July 16, when a special train will leave Paddington Station at 9.40 a.m. for Reading, whence launches will convey the visitors to Windsor, luncheon being served *en route* at Medmenham. Tea will be provided at Surley Hall, and the special train will leave Windsor for Paddington at 8.40 p.m. On the last day of the meeting the members are to assemble at Woolwich, where luncheon will be provided by the London Section at the Masonic Hall, after which Messrs. Siemens' Telegraph Cable and Electric Construction Works will be visited. In the evening the proceedings will be brought to a pleasant close at the Hotel Cecil, where there will be a reception by the President at 7 o'clock, followed by dinner and a smoking concert.

Kelly's 'Directory of Chemists and Druggists,' for 1896, a copy of which has just been received, is a portly volume containing the names of more than 40,000 persons, being an increase as compared with the previous edition of the work, of about 3000 names. It is pointed out, in the preface, that the number of persons legally entitled to term themselves "chemist and druggist" is something over 15,000, and that those actually in business number 9000 only. The balance of 31,000 names in the Directory are those of manufacturers of chemical products and apparatus, analytical and metallurgical chemists, wholesale druggists, perfumers, drysalters, patent medicine vendors, dentists, chiropodists, photographers, medical botanists, etc., etc., together with those of a number of persons classed, unfortunately for the credit of the name, as "chemists and druggists," but not legally entitled to that designation. It seems rather a pity that the publishers do not check the lists of "chemists and druggists" in their Directory by the complete Register published annually by the Pharmaceutical Society. Speaking generally, however, the increased number of names in the Directory renders it more valuable than ever as a work of reference, and the book remains indispensable to everyone who has occasion to do much business with traders belonging to the classes included within its scope.

Apparatus for Testing the Purity of Air.—*Industries and Iron* describes an interesting little apparatus used for testing the condition of the air in workshops and other places, which has been on view at the Industrial Exhibition in Zurich. The action of the apparatus depends upon the action of carbonic acid gas upon a coloured solution contained in a vessel, from which a glass syphon takes one drop about every hundred seconds, and lets it fall upon a cord that hangs vertically beneath. Should the atmosphere be much polluted with carbonic acid, the drop loses its red colour, and becomes colourless at the upper portion of the cord. But should the air be moderately pure, the change, if any, does not take place till further down the cord, along which a scale is fixed to indicate the degree of purity of the air according to the distance at which the change in colour takes place.

The Liverpool Conference Programme.—We understand that there is every indication of a very large attendance of Members of the British Pharmaceutical Conference and their friends at Liverpool, and this is not to be wondered at when the attractive programme is considered. According to the pink circular, the reception by the President of the Conference and Mrs. Martindale at the Walker Art Gallery, Liverpool, on Monday evening, July 27, will be followed by a conversazione, at which there will be a demonstration of radiography, music, and light refreshments. On the following day the members will be welcomed by the Lord Mayor, the Earl of Derby, in the Arts Theatre of University College, and after the Sessions of Conference there will be a cruise on the ss. "Magnetic" on the Mersey and in Liverpool Bay, tea being served on board. On Wednesday afternoon the Lancashire Watch Factory, Prescot, will be visited, the party proceeding on coaches *vid* Croxteth and Knowsley. Tea will be served at Prescot, and on returning, there will be smoking and drawing-room concerts at the Adelphi Hotel. The whole-day excursion on the Thursday will be to Chester, Eaton Hall, and Hawarden, the first portion of the journey being by steamboat, and the remainder by coaches. No. 1 book of tickets, price 10*s.* 6*d.*, will admit to the reception, luncheons, river cruise, excursion to watch factory, and smoking concert. No. 2 book, also price 10*s.* 6*d.*, will include railway and coach fares, and luncheon and tea on Thursday. Application for these tickets should be made to the honorary local secretary, Mr. Theo. H. Wardleworth, 56, Hanover Street, Liverpool, on or before July 20. Mr. Wardleworth will also engage rooms for members and their friends if they will communicate with him without delay.

Drapers as Chemists.—The *Drapers' Record* confesses to feeling some astonishment at the decision of the Marylebone licensing authorities to adjourn for nine months the consideration of an application by a firm of drapers for a licence to sell medicated wines in "their new chemist's department." The Chairman of the Sessions, Mr. Boulnois, M.P., remarked, in stating this decision, that "it would become a very serious thing if all the drapers in London were going to open chemist's shops in their establishments, and sell medicated wines." The *Drapers' Record* thinks this observation is "a trifle silly," as there is not the remotest chance of "all the drapers in London" acting in the manner suggested. But apart from this phase of the question, it is asked why it should be regarded as a "very serious thing" that drapers should add a chemist's department to their business? "Is it supposed that the assistant who at one moment is selling ribbons may be the next moment called round to dispense arsenic? Mr. Boulnois, at least, ought to be aware that no drugs can be dispensed except by a fully qualified chemist. And there is much less danger in selling medicated wines—now a recognised element in the Pharmacopœia—than in dispensing many other constituents of our materia medica." In the last quotation lies the clue that the *Drapers' Record* seeks. There is no apparent reason why Mr. Boulnois should be aware of what is not the fact, and there is a strong suspicion in many minds that in cases such as that referred to, assistants trained in quite different directions are called upon at times to sell medicinal articles concerning which they know absolutely nothing.

REMUNERATION FOR PROFESSIONAL SERVICES.—In continuation of a correspondence on the subject of the remuneration of medical men, a writer in the *Lancet* of 4th. inst, points out that as a profession medical men can do much to help themselves in this respect, and "especially by inculcating proper ideas of professional dignity and of self-respect into the minds of those who come to our schools for their education." He adds "These young men, who are such terrible critics—a fact to which many of their seniors seem singularly blind—must, when they are initiated, deem many of the doings around them very anomalous. What must they think when they hear that the remuneration of the demonstrators who teach them is either nothing at all or about the same as that of a labourer or perhaps of an artisan. Doubtless, they ponder and turn over in their minds all sorts of doubts and queries. They will ask, Who fixes this scale of payment? Medical men. But medical men would not be ungenerous to each other. Besides, when a medical man fixes the remuneration of his brother medical man he is, although he may not know it, fixing his own. Or, perhaps, he thinks his teacher is working for a golden future, but then he recalls X, Y, and Z, and all the other letters of the alphabet too, to whom no golden future ever came, and who left their *alma mater* disappointed men with bitterness in their hearts and nothing in their pockets. It seems natural then for our tyro to ask, Why were they not properly paid? and at last he comes to the conclusion either that medical men are heartless and ungenerous to each other, or that medical men ought to work for nothing."

THE SALARIES OF SCIENCE DEMONSTRATORS.—Dispensers and demonstrators in medical schools are not the only trained professional men who are the recipients of absurdly small salaries. A correspondent of *Nature* protests against what he describes as "nothing less than a public scandal," a university college having offered a salary of £70 per annum for a demonstrator of chemistry. How, he asks, is a man of the desired type to support a decent existence on such a salary? The effect of giving extremely low salaries to holders of such posts must, it is pointed out, tend to keep them in the hands of individuals possessed of private means, or to fill them with men of an inferior class. The public interest requires that those who are chosen to educate the rising generation should have as deep knowledge and wide culture as possible, but the width of culture and depth of knowledge attainable on £70 per annum, with the day fully occupied in the routine work of teaching, cannot be extensive. Chemistry demonstrators suffer even worse than others in the matter of salary, though their duties are heavier, and it is suggested that the payment of any annual sum under £100 is scandalous, and that the proper amount to pay should rather be £150.

THE NEW LITMUS PENCIL.—A convenient method of using the new litmus pencil, introduced into this country by Messrs. Thos. Christy and Co., which a writer in the *Chemical Trades Journal* describes, is to make a small red or blue spot, as the case may be, and place on the same a drop of distilled water of somewhat greater diameter. The liquid is then drawn slightly off the litmus spot, a solution having been formed *in situ*. On adding a grain of the substance to be tested, the reaction is clearly visible against the white surface of the paper. In this way great accuracy is attainable.

STAMPING OF PRESCRIPTIONS.—Dr. W. R. Gowers writes to the *Lancet* protesting against the practice of druggists to stamp their names and addresses on the prescriptions they dispense. He contends that if there be any justification for so stamping prescriptions at all, it should be done only on the back. Dr. Gowers suggests that a definite rule ought to be laid down in regard to this practice, and he thinks that this should be done by the Pharmaceutical Society. Reference is also made to alterations in the dose of certain constituents in prescriptions, with the initials of the druggist and the date attached. This Dr. Gowers considers to be only for the druggist's private convenience, and "without even the semblance of a warrant."

THE 'PRACTITIONER' ON THE GENERAL MEDICAL COUNCIL.—The monthly journal of practical medicine edited by Mr. Malcolm Morris is nothing nowadays if not to the point. In the last issue the Editor runs a-tilt at the General Medical Council, which he regards as a very costly luxury to the profession, and more ornamental than useful as at present constituted. "It is, in fact, an academic body, and therefore is apt to look at things with something of pedantic narrowness. The President rivals Mr. Gladstone in mental alertness, but still 'he cannot choose but be old.' Many of the members are too evidently the subjects of that ossification of intellect which generally comes with years. It is not surprising therefore that the proceedings of the Council are marked by a certain senility, not infrequently, indeed, degenerating into anility." The suggestion is offered that the Council should be constituted on a broader basis, or at any rate revitalised by a large infusion of new blood, the profession being more adequately represented and the interests of the whole body regarded before those of the "shops."

"EDUCATION AND EXAMINATION" serves Mr. Morris as another text. At present, he thinks, there is too much examination for medical students and too little education. "In point of training the student should be given more solid fare and fewer kickshaws, and the examiner should test the candidate's knowledge as well as his learning, and should look for sense as well as science." Many will be inclined to agree with the assertion that the student of to-day is examined too much, and also that there is too much encouragement to specialists acting as examiners to mount their hobbies during examinations. Professional examinations should test the fitness of candidates to practise their chosen professions, not to ascertain their capacity to become specialists in this, that, or the other subsidiary science.

'SCIENCE PROGRESS' for July commences with an article on prehistoric man in the Eastern Mediterranean, in which J. L. Myres summarises the results of recent research among the prehistoric peoples and civilisation of that part of the world, especially in so far as those peoples prepare the environment for the first great civilisation of Europe, that of Greece. The Graptolites, which belong to the Hydrozoa, supply a text to J. E. Marr; part VI.(B) of "Insular Floras," is contributed by W. Botting Hemsley; Dr. John Beddoe treats of "Selection in Man" and C. W. Andrews of "Recent Discoveries in Arian Palæontology."

A NEW SELF-REGISTERING THERMOMETER is described in a recent number of the *Comptes Rendus*. The two arms of a balance carry respectively a barometer and an air-thermometer, both of which dip into the same mercury-trough, and at constant temperature, and with varying atmospheric pressures, the alterations in the weights of the two arms caused by the movements of the mercury are identical, so that the balance remains in equilibrium. An alteration of temperature, however, results in a movement of the beam, which can easily be made self-registering. For a short range of temperature the sensitiveness of the apparatus, which readily acts as a temperature regulator, is considerably increased by substituting a volatile liquid for the gas.

PHARMACEUTICAL SOCIETY

DONATIONS TO THE LIBRARY AND MUSEUM.

At a meeting of the Library, Museum, School, and House Committee, held on Wednesday, the 8th inst., the Librarian presented the following report of donations:—

To the Library (London).

Mr. A. H. Hinde, Lowestoft:
Suffling, The Land of the Broads.

Messrs. Donald Currie and Co., London:
Pennell, "Tantallon Castle," the Story of the Castle and the Ship, 1895.

Prof J. Reynolds Green, F.R.S.:
Manual of Botany, vol. 2, 1896.

American Pharmaceutical Association:
Proceedings, vol. 43, 1896.

École supérieure de pharmacie de Paris:
Barnouvin, Organismes des hydrolats et de solutés, 1896.
Delépine, Sur une méthode de séparation des méthylamines par l'aldéhyde formique, 1896.

The following report of donations was presented by the Curator:—

To the Museum.

Messrs. W. J. Bragg and Co., Liverpool:
Large sample of spurious Maranham jaborandi.

Mr. T. W. Rheeder, Newcastle-on-Tyne.
Fine specimen of native calamine from Alston Moor.

Mr. J. H. Maiden, Director, Botanic Gardens, Sydney:
Fresh fruits of *Livistona australis.*

Messrs. Wright, Layman, and Umney, London:
Specimen of Japanese fennel fruits.

Messrs. Evans, Lescher and Webb, London
Seeds of *Plantago psyllium.*

Dr. G. Schweinfurth, Cairo:
Six specimens of native drugs from North-east Africa.

Messrs. Horner and Sons, London:
Specimen of oil of orris and of the Mogador orris root from which it was distilled; of oil of patchouli and of the leaves from which it was distilled; sample of olive oil, guaranteed pure.

Messrs. G. N. Souratty and Co., London:
Specimen of the flowers of *Plumbago rosea*, "used in Turkey as a narcotic."

To the Herbarium.

Mr. G. C. Druce, M.A., Oxford:
Specimens of *Sagina reuteri*, *Nitella mucronata*, and *Tolypella glomerata.*

Mr. W. Moore, Felstead:
Specimen of *Orobanche rapum.*

Dr. Geo. Watt, C.I.E., Calcutta:
Two specimens of Psychotria ipecacuanha in fruit, cultivated in Sikkim.

Dr. G. Schweinfurth, Professor of Botany, Cairo:
Specimens of *Commiphora abyssinica*, *C. africana*, *C. kafal*, *C. schimperi*, *C. opobalsamum*, *Boswellia papyrifera* and *B. socotrana*, *Acacia fistula*. *A. senegal*, *Acacia seyal*, and var *multijuga* *Albizzia anthelmintica*, *Acohanthera schimperi*, *Canarium schweinfurthii*, *Catha edulis*, *Celosia anthelmintica*, *C. trigyna*, *Mollugo hirta*, *Gymnosporia senegalensis*, var. *spinosa*, *G. serrata*, *Moringa aptera*, *M. arabica*, *Phytolacca abyssinica*, and *Trianthema pentandra.*

The Curator:
Specimens of *Imperatoria ostruthium*, *Archangelica officinalis* and *Allium macleani*; cultivated at Sevenoaks.

MEETING OF THE EXECUTIVE OF THE NORTH BRITISH BRANCH.

A meeting of the Executive of the North British Branch was held in the Society's House, 36, York Place, Edinburgh, on Friday, July 3, at 11 a.m., Mr. J. Laidlaw Ewing in the chair. Present:—Messrs. Bowman, Coull, Currie, Davidson, Ewing, Fisher, Hardie, Henry, Kermath, Kerr, Lunan, McAdam, McLaren, Mitchell, Moir, and Strachan.

Apologies for absence having been received from Messrs. Johnston, Paterson and Storrar, the minutes of last meeting were read and approved.

The CHAIRMAN then intimated that the first business was the election of a Chairman of the Executive.

Mr. CURRIE moved that Mr. Ewing be re-elected for the ensuing year. They were still engaged in a scheme of alterations, of which Mr. Ewing had a very intimate knowledge, and it was very desirable that he should continue to superintend. He therefore hoped Mr. Ewing would see his way to accept.

Mr. KERR seconded the motion, and it was unanimously agreed to.

Mr. EWING, in accepting, thanked Mr. Currie for his kind remarks. It was his desire to see the work in connection with the Society's House completed, and chiefly for that reason he had pleasure in agreeing to their unanimous wish.

Mr. HENRY moved that Mr. Currie be elected Vice-Chairman. It was only fitting that a representative from "the second city of the empire" should occupy a prominent position on the Executive, and Mr. Currie had taken a very active interest in their work, and had very ably discharged the duties of chairman at one of their recent evening meetings in Edinburgh.

Mr. KERMATH seconded the motion, and it was unanimously agreed to.

Mr. CURRIE said he had to thank them very heartily for their kind appreciation of anything he had done. It was a great pleasure to him to be of any service, and he would be glad to do the same in the future.

The CHAIRMAN then said he had much pleasure in the name of the Executive in welcoming the new representatives, Mr. Mitchell, Inverness, and Mr. Maclaren, Edinburgh. He had also to take note of the retiral—they hoped temporarily—of two useful members, Messrs. Gibson and Nesbit.

Mr. MITCHELL said he had to thank them for their kind welcome He could say it was a great satisfaction to the pharmacists in his district that they had been able to send a member to the Executive.

Mr. MACLAREN said he would be very pleased if he could in any way be of service to the Executive.

The CHAIRMAN said he felt sure there would be a general wish that the Executive should in some way take notice of the retiral from the presidential chair of the Society of one who had been intimately associated with them in the work of the Executive. He therefore proposed that they should adopt the following resolution, to be engrossed in their minutes:—

> "That this Executive desires to place on record an expression of its indebtedness to Mr. Michael Carteighe for his services as president, and of its high appreciation of the unselfish and earnest efforts he has successfully made to advance the interests of the Society, and promote loyalty to one another, and a cordial feeling of unity and sympathy among pharmacists, both north and south of the Tweed.'

He had already said, at the annual meeting, what he personally thought on this subject, and he felt sure this proposal would immediately commend itself to their unanimous approval.

The VICE-CHAIRMAN, in seconding the resolution, said Mr. Carteighe had done more than any former president to advance the interests of pharmacy and promote relationships of a friendly nature between pharmacists in all parts of the country. When it had come, perhaps to their regret, that Mr. Carteighe felt he should retire, it was a great satisfaction to have a gentleman so well qualified as Mr. Walter Hills to occupy the high position which had been vacated. He thought it was impossible to exaggerate their indebtedness to Mr. Carteighe, and it was their earnest hope that, though he had retired from the chair, he would not relax his efforts, as he felt sure he would not, to further the interests of the Pharmaceutical Society.

On being put to the meeting the motion was unanimously and very cordially agreed to.

It was moved by Mr. Kermath, seconded by Mr. Fisher, and agreed that the Chairman, Vice-Chairman, and resident members be appointed a General Purposes Committee to take charge of any business arising between meetings.

Mr. MCADAM moved, and Mr. Davidson seconded, that the Chairman and Vice-Chairman and Messrs. Kerr, Storrar, and Strachan be appointed a Committee to consider the nomination of Examiners, and report to the meeting of Executive in November.

Mr. BOWMAN proposed Mr. Kermath as a member, and with this addition the motion was agreed to.

The Executive went into Committee to consider the proposed transfer of the Materia Medica Museum of the Royal College of Physicians to the Society.

On resuming, the Chairman said it was now practically settled that the transfer would take place about the end of the present year, and he moved that it be remitted to the General Purposes Committee, with powers to deal with the matter.

Mr. KERMATH seconded the motion, and it was unanimously agreed to.

After consideration in Committee, the plans for readjustment of the Society's House and the arrangements for evening meetings were remitted to the General Purposes Committee.

The Chairman and Vice Chairman and Messrs. Bowman, Coull, Davidson, Kerr, Lunan, Maben, McLaren, and Moir were appointed delegates to attend the meetings of the British Pharmaceutical Conference in Liverpool.

The Chairman drew attention to a portrait of the late Baillie J. F. Macfarlan, which had been hung in the Board-room. This was an interesting addition to their collection of portraits, as Mr. Macfarlan was the second president of the North British Branch and the first representative to the Council of the Society from Scotland. For this portrait they were indebted to Mr. Macfarlan's daughters, Mrs. Stewart, Miss Margaret Fletcher Macfarlan, and Miss Alexandrina Johnstone Macfarlan, and he moved that they send these ladies a letter of thanks for this handsome gift.

Mr. MCADAM seconded the motion, and it was unanimously agreed to.

The meeting then closed.

EXAMINATIONS IN LONDON.

July, 1896.

MAJOR EXAMINATION—PASS LIST.

Candidates examined	42
,, failed	18
,, passed	24

Bowen, Edgar Cecil.
Brice, Henry Doyle.
Davis, Sidney.
De Morgan, Fredk. Filmer.
Hill, Charles Alexr.
James, Henry Palmer.
Lean, Wilfred.
Nicholson, John Gordon.
Payne, Roger.
Rymer, Frank Victor.
Senter, George.
Smith, Albert George.
Smith, Maurice.
Spurge, Edward Charles.
Stamp, Francis Underwood.
Stones, Arthur John.
Sturch, Harry Howes.
Taylor, Archibald Leonard.
Tunbridge, Francis Fredk. Arnull.
Veitch, Wm. Cuthbert.
Wild, George Herbert.
Williams, George.
Williams, John (Corwen).
Wilson, Harold.

EXAMINATIONS IN EDINBURGH.

July, 1896.

MAJOR EXAMINATION—PASS LIST.

Candidates examined	7
,, failed	4
,, passed	3

Bateson, Alfred Campbell.
Currie, Archibald.
Latham, Hugh.

BRITISH PHARMACEUTICAL CONFERENCE.

LIVERPOOL MEETING, 1896.

PRELIMINARY LIST OF PAPERS TO BE READ.

1. "A Further Analysis of *Cactus grandiflorus*," by Gordon Sharpe, M.B.
2. "Note on Unguentum Conii, B.P.," by R. Wright and E. H. Farr.
3. "Note on the Strength of Some of the Official Succi," by R. Wright and E. H. Farr.
4. "Notes on Potass. Sulphuret, Formic Aldehyde, Cotton Seed Oil," by W Elborne, B.A.
5. "The Effect of Solvents on the Analytical Characters of Ginger," by J. F. Liverseege, F.I.C.
6. "Radiography," by Leo Atkinson.
7. "Rennet Essence," by J. A. Forret.
8. "A Safety Pipette," by E. W. Lucas.
9. "Cascarillin," by W. A. H. Naylor, F.I.C., and R. D. Littlefield.
10. "Oil of Japanese Fennel," by J. C. Umney.
11. "The Effects of Climate and Soil on Oils of Peppermint," by J. C. Umney.

REVIEWS AND NOTICES OF BOOKS.

MATERIA MEDICA AS TAUGHT IN FRANCE.

LES DROGUES SIMPLES D'ORIGINE VÉGÉTALE. Par MM. G PLANCHON et E. COLLIN. Pp. 988. Vol. II. Paris: Octave Doin. 1896.

The general character and scope of this work has already been described (*Pharm. Journ.* [3], xxv., pp. 811, 812). It is only necessary, therefore, to allude to the more salient features in the second volume. One of the first that strikes an English reader in perusing this volume is that the classification of materia medica according to the natural orders is a mistake, at least until some unanimity has been arrived at amongst the botanists of different countries as to the sequence of the orders. Thus the system usual in England is reversed in France, the second volume beginning with Compositæ, and ending with Ranunculaceæ. Another feature is that the use of the vernacular names under the illustrations instead of the botanical name gives an unnecessary amount of trouble to the reader who is not familiar with French names, especially as there are many American and other drugs for which the botanical name must be used, in consequence of there being no vernacular French names for them. These faults are, however, minimised by the very excellent index, which will serve as a dictionary of the French names of drugs, and cannot fail to be extremely useful to pharmacists who have to dispense French prescriptions, in which the French names of herbs used for tisanes, etc., may occur.

The chief value of the book to British readers will be as a work of reference concerning unusual drugs, their appearance and uses. The large number of figures of sections of roots, barks, etc., both macroscopic and microscopic, particularly the former, will serve to identify many uncommon drugs that appear only occasionally in the market. With respect to the illustrations of powdered drugs it is a matter for regret that those which are more commonly met with in powder have not been selected instead of those which are seldom seen in that state. Thus, drawings of ararob powder and of that of the leaves of *Rhus coriaria* and of powdered cloves, would be more useful than those of guaiacum wood and cusparia. The botanical part is not quite up to date here and there; thus myrrh is referred to as *Balsamodendron ehrenbergianum*, Berg. (*B. opobalsamum*, Kunth, p. 510), the plant that really yields Mecca balsam, and to which the latter product is also attributed on p. 520. The account of the botanical sources of asafœtida and of galbanum are also somewhat mixed, the asafœtida of French commerce being attributed partly to *Ferula alliacea*, and the galbanum to *F. rubricaulis*, which is a distinctly alliaceous plant, and sarcocoll is said to be derived from *Astragalus sarcocolla*, Jaborandi is attributed to *Pilocarpus pennatifolius* and *P. selloanus* instead of to *P. jaborandi*, although the very distinct leaves of the last-named are figured. As a rule the illustrations are good, but it would have been an advantage to students who do not know the plants if it had been stated how much the figures differ from the natural size. Thus, a whole plant of linseed is represented about one-third or one-fourth of its natural size, whilst that of *L. catharticum* is as nearly as possible of the natural size. The illustration of *Aconitum napellus*, Fig. 1349, is by no means characteristic, the shape of the flowers differing considerably from the more correct form delineated in a single flower, Fig. 1350, and the plant figured as *Anemone pulsatilla* has the reflexed sepals of *A. pratensis*. Of the macroscopic sections of roots, etc., those of *Pareira brava* are very misleading, whilst those of *Helleborus niger* and *Cimicifuga racemosa* would hardly be recognised by an average student. But

with these exceptions the illustrations are very reliable. So far as the large number of drugs treated of are concerned, and the amount of valuable microscopical work bearing upon them is concerned, there is no other work that can quite be considered on a par with it.

INDUSTRIAL CHEMISTRY IN 1895.

THIRTY-SECOND ANNUAL REPORT OF THE CHIEF INSPECTOR OF ALKALI WORKS.

Mr. R. Forbes Carpenter issues his first annual report, in succession to those of Mr. A. E. Fletcher, who has retired after thirty-one years of efficient and valuable public service, eleven of which were passed as Chief Inspector.

During 1895 the ammonia-soda process reached the point where for the first time its production in Great Britain exceeds that of the old Leblanc process. The total quantity of salt decomposed by the two processes was in 1895 836,787 tons, of which the Leblanc process accounted for 408,173 tons, or 48·7 per cent. In 1894 its proportion was 54·6 per cent., in 1893 57·2, and in 1892 63·0 per cent.

The chances are that this descent will continue in an accelerated ratio. Soda ash manufacture by the Leblanc process is practically at an end, the only users being persons who will not depart from the old routine to which they have been accustomed. The main alkali production by that process has been caustic soda. The Chief Inspector makes no reference to the "ferrite" process now in operation at the works of Messrs. Brunner, Mond and Co. The main patent is nearly expired, and other firms are making preparations for its adoption.

After a century of existence, the time is not far distant when the requiem of the Leblanc process will be chanted, and the Chief Inspector's report will cease to contain other than historical references to alkali waste or the escape of noxious gases therefrom. Alkali has, in fact, ceased to be more than a secondary product, the true primary product being hydrochloric acid. At the time of passing the Alkali Act, hydrochloric acid was regarded as a nuisance, to be got rid of by the readiest possible means. As might be expected under such conditions, the condensation has become more and more perfect; an escape of 5 per cent. of the total acid, which the original Alkali Act permitted, is now reduced to 1·62 per cent. in 1895. The greatest consumption of hydrochloric acid continues to be in the manufacture of chlorine and chlorine products, which are now seriously threatened by electrolytic processes, to three of which the Chief Inspector refers in his report. First, the Holland and Richardson process, now working at St. Helens. In this no porous diaphragms are used, but instead there are non-porous curtains or screens, to keep the products of electrolysis apart. The merit of this process is its extreme simplicity; but the separation of the salt from the alkali still leaves much to be desired.

The second in the Castner-Kellner process, for which large works are being erected at Weston Point, close by the margin of the Cheshire salt deposits. It consists of a modification of the mercurial cathode system. In the cell containing the anode an amalgam is formed containing about 1/200th part of its weight of sodium. After the formation of the amalgam, it is run into an adjoining cell, where the sodium is separated by contact with water, the mercury being again returned to the anode cell to be recharged with fresh sodium. If the proportion of sodium is allowed to become too high, the efficiency of the current is decreased, and, in addition to that, the amalgam becomes pasty, so that it will not flow properly; hence the necessity for employing such a large proportion of mercury. At the experimental works 70 tons of mercury were used per ton of salt decomposed per hour.

The third is the Hargreaves-Bird process, in which the novelty consists in the cell employed, which has the electrolyte (solution of salt) only in the central anode compartment. There are two empty cathode compartments separated from the anode compartment by diaphragms of special construction that are watertight so long as no electric current is passing. The cathode is of wire gauze placed in contact with the diaphragm, from which the soda is washed away as soon as formed.

To form carbonate the exhaust waste burnt gases from the gas engine are admitted into the cathode cells. In consequence of the rapid removal of the alkali the drawback of forming secondary products, such as hypochlorites, etc., is avoided. The chlorine produced has a purity of 97·5 to 98·5 per cent., and the voltage required is extremely low, being only 3·2 to 3·5. Mr. Hargreaves prefers to work for the production of carbonate rather than caustic, as he finds that a given amount of electrical energy produces materials having a higher aggregate market value than when working for caustic.

Again (going beyond the Chief Inspector's report), we learn that the United Alkali Co., which has hitherto had a monopoly in this country of the manufacture of chlorate of soda, has now found serious competitors in Messrs. Bowman, Thompson, and Co., who have recently erected plant for a production of ten tons per week, or about 50 per cent. of the present total production.

The growth of the chemical manure manufacture is shown by a quotation from Mr. Cross, M.P., who states that there is an annual production of one million tons in the United Kingdom alone, and a total production of four million tons, shared by Germany, France, Belgium, Holland, Denmark, and the United States, the aggregate value of which amounts to £10,000,000 sterling.

In addition to this the consumption of potash, guano, bone and slag phosphates, etc., bring up the total value of materials for restoring the fertility of the land to no less than £22,000,000 sterling. The production of sulphate of ammonia has increased from 160,048 tons, in 1894, to 179,651 tons, in 1895, or 12·2 per cent., yielding a value of £1,500,000 at the present extremely low price.

PHARMACEUTICAL SOCIETY OF IRELAND.

The monthly meeting of the Council was held on Wednesday the 1st inst., at 67, Lower Mount Street, Dublin. There was considerable delay before a quorum was obtained. The members who attended were the President, Mr. W. J. Wells, junr., and Messrs. Beggs, Whitla (Monaghan), Conyngham, Kelly, Hayes, and Charles Evans.

A letter from Mr. George H. Dawson, Secretary of the California State Board of Pharmacy, intimated that all applicants possessing credentials as pharmaceutical chemists of Ireland would be registered in California without examination.

On the motion of Mr. Hayes, seconded by Mr. Whitla, thanks were voted to the California Board, with an expression of regret that the Society's Act of Parliament did not allow it to reciprocate.

A letter from Dublin Castle intimated that the Lords Justices, after having fully considered the memorial of David Wilson, of Rathfriland, upon whom two penalties of £5 each had been imposed for breaches of pharmacy law, had decided to reduce one of the penalties to £4.

The President said he was sorry, after the strong letter which had been written to the Lords Justices on the subject, that the latter had not seen their way to upholding the law. The Council of the Society had been badly treated all through. Men in the country would say that they had nothing to do but to appeal to the Castle authorities, and that the latter would sympathise with them and take off the penalties. It was very little encouragement to the Council to carry out the law.

A letter from the Clerk of Claremorris Petty Sessions forwarded £3 6*s.* 8*d.*, two-thirds of a fine imposed on John Noone for unlawfully selling Cooper's sheep-dip.

The President said that in that case the Lords Justices decided last November that the law should take its course.

A letter from Mr. James A. Haslett, a licentiate of the Society and a member of the New Zealand Pharmacy Board, asked for copies of the Irish Society's examination papers, calendar, and examination syllabus.

The request was ordered to be complied with, and it was directed that the New Zealand Board's papers should be asked for.

Donations having been acknowledged, the meeting broke up without finishing the agenda business, owing to the want of a quorum.

PHARMACEUTICAL ASSOCIATION OF QUEBEC.

ANNUAL MEETING.

At the last Annual Meeting of the Pharmaceutical Association of the province of Quebec, held in the lecture hall of Laval University, Quebec, Mr. R. W. Williams, of Three Rivers, President, occupied the chair. After reading the minutes of the previous meeting, the chairman called upon Mr. E. Muir the secretary-registrar to read the annual report and treasurer's financial statement, both of which were highly satisfactory, and upon motion were unanimously adopted, after which the President read his annual address, going pretty fully into the position of the Association, and touching upon a number of points which had come up for discussion in the Council during the past year. The President's address and the annual report and financial statement, were, on motion, ordered to be printed in French and English and circulated among the members. A motion was then adopted appointing Dr. T. D. Reed, of Montreal, honorary member of the Association, and Mr. Alexandre Lemieux, of Quebec, as scrutineers, and they retired to count the ballots for the six new members to be elected as members of the Council, the number of ballots received being the largest in the experience of the Association. During the counting of the ballots, discussion took place upon matters of general interest to the Association, notably, the desirability of extending the curriculum of study for students entering the study of pharmacy, and also the desirability of raising the standard of the Major and Minor Examinations. The scrutineers having completed their work announced that the following gentlemen had received the highest votes polled and were therefore duly elected as members of the Council for two years, namely :—Messrs. Joseph Contant, S. Lachance, R. McNichols, Alexis Robert, Dr. J. Leduc, and J. L. Barnabé ; these with the following gentlemen, namely :—Messrs. R. W. Williams, C. J. Covernton, A. D. Mann, C. E. Scarff, and J. Emile Roy will comprise the Council for the ensuing year. After the usual votes of thanks had been adopted the meeting closed.

PARLIAMENTARY NOTES AND NEWS.

VINCENT VICTORIOUS. — The honourable member for Central Sheffield is to be congratulated on having rendered nugatory the "ways that are dark and the tricks that are vain" of the foreign importers of cocoa into this country. Reference was made in our last issue to the question put by Sir Howard Vincent to the Chancellor of the Exchequer on the subject, and the answer given thereto (*ante*, p. 10). The House of Commons has now adopted the following recommendation of the Committee of Ways and Means :—

> "That the duty of Customs now payable on cocoa or chocolate, ground, prepared, or in any way manufactured under the provisions of the Act 42 and 43 Vict. c. 21, s. 3, shall be payable on that product of the cocoa bean which is generally known as "Cocoa Butter."

That resolution is to be embodied in the Finance Bill, and will in due course become effective.

THE COMPANIES BILL.—A further sitting of the Select Committee was held on Friday the 3rd instant, under the presidency of the Lord Chancellor. The witness on that occasion was Mr. H. Tritton, Vice-President of the Institute of Bankers and of the London Chamber of Commerce, and he did not appear to be particularly happy in his objections to the Bill. Mr. Tritton seems to regard the Bill as having been framed in the interest of certain functionaries whom he called "company wreckers," but beyond repeating a few platitudes on the disastrous consequences likely to ensue to British commerce, if the law in regard to directors were made more rigorous, he did little to support his view. He thought the Bill would compel every director of a concern to act as if he were in charge of it, and considered that it would be impossible for every director to exercise the same diligence as if he were a managing director. He also raised the usual solemn warning against frightening good and solvent men away from the directorship of companies. It is really amusing to see how terrified these "good and solvent men" are represented to be at the trifling responsibilities which the Bill seeks to impose upon them in the interests of the investing public. Mr. A. F. Wallace, a director of the Bank of England, was next examined. He generally approved of the provisions of the Bill, but in regard to directors' liabilities he wished to substitute the Marquis of Londonderry's amendment limiting the liability to loss arising out of culpable negligence or any wilful default. The liability of a director ought also, he thought, bear some relation to the amount he had earned in the company. It is understood that at the sitting of the committee, on the 10th instant, the Registrar of Joint Stock Companies, Mr. J. S. Purcell, C.B., will be examined.

DECIDUOUS BILLS.—The present Session of Parliament will be remarkable in history for the number and variety of the Bills introduced, which, after flourishing awhile with goodly promise, have dropped off into oblivion. Among these fallen leaves from the legislative tree may be found measures dealing with education, beer adulteration, boiler registration, the amendment of the law relating to workshops and factories, the abolition of grocers' certificates (Scotland), the alteration of the licensing laws, local taxation (Customs and Excise), merchandise marks, midwives' registration, payment of jurors (a subject of extreme interest to the average citizen), sale of foreign goods, and the suppression of street noises. These are only a few of the failures of the Session, but they will be added to before the middle of August, and one may gather therefrom some idea of the waste of energy going on at St. Stephens.

THE PETROLEUM COMMITTEE.—At the meeting of the Committee on Friday, the 3rd instant, Professor Dewar's evidence as to the effect of raising the flashing point to 100° or 105° was confirmed by Professor Karl Engler, head of the German Government Department of Chemistry. Professor Engler gave it as his opinion that such a line of action would increase the cost of oil 20 per cent. Dr. Lunge, of the Zurich School of Chemistry, also gave evidence as to the use of petroleum in Switzerland.

INCOME TAX PAPERS.—The member for North Islington, Mr. G. C. T. Bartlett, has discovered that the form of return for assessment under Schedule D this year has no headings under which deductions are allowed in estimating profits and gains. He, therefore, promptly constituted himself the taxpayers' friend by asking the Chancellor of the Exchequer whether his attention had been drawn to the omission, whether it was intentional, and whether it was authorised by the Income Tax Acts. The Chancellor's answer was to the effect that he knew all about it, that the omission was intentional to simplify matters, and that everything was legal and done "solely in the interest of the taxpayer." One does not like to call in question the utterances of Sir Michael Hicks Beach, but these benefits to the taxpayer have a knack of coming in a questionable shape.

TEACHING UNIVERSITY FOR LONDON.—The long expected Bill for the re-organisation of the London University has emerged from the Privy Council Office, and has been introduced into the House of Lords, as foreshadowed in these columns. In presenting the Bill, which is entitled the London University Commission Bill, for first reading, on Monday last, the Duke of Devonshire gave a *résumé* of the circumstances leading up to the birth of the present measure, and explained that it was practically identical with Lord Playfair's Bill of 1895. It would, however, give larger powers and a wider discretion to the proposed statutory commission than was intended by its predecessor. There were other modifications, too, designed to meet the objections which graduates who had obtained their degrees by private study might otherwise have ground for urging. On the whole his Grace thought he might confidently ask the House to allow the first reading to be taken, as the scheme which the Bill was intended to carry out was approved by a large majority of high educational and scientific authorities in England, and had also received the warm support of the University Senate. The Bill was read a first time, and was ordered to be printed. Its chance of a hearing in the Commons is extremely remote, if not impossible, but the honour of the Government has been saved. No one is likely to work up much educational enthusiasm so near the summer vacation, especially on a doomed measure, but one must recognise the necessity for giving the Government an opportunity of redeeming its pledges.

STAMPING OF WEIGHTS.—Mr. Broadhurst, the representative of Leicester, has given notice that he will ask the President of the Board of Trade whether weights stamped in one county and used in another county must be re-stamped.

THE FOOD PRODUCTS ADULTERATION COMMITTEE, at its sitting on Wednesday, declined to adopt the chairman's recommendation, relating to margarine, that the admixture of butter should be permitted and the use of innocuous colouring matter be allowed.

SCOTTISH NEWS.

THE EDINBURGH PHARMACY ATHLETIC CLUB decided the second of its series of swimming races on Friday last. The distance was 100 yards, and a keen struggle ensued. Two yards covered the placed men, who finished in the following order:—1, J. Greig (26 sec.); 2, G. H. C. Rowland (3 sec.); 3, A. G. Paterson (scratch). The next competition comes off on August 4.

A BANKRUPT CHEMIST'S ESTATE.—In the Court of Session on July 2, the Second Division disposed of an appeal from the Aberdeen Sheriff Court, in which Mr. A. S. Cook, clothier, Market Street, Aberdeen, as trustee for behoof of the creditors of Marshall Thomson, chemist, Ballater, and as an individual, sought to have Messrs. William Sinclair and Company, wholesale druggists, Aberdeen, ordained to deliver to him two bills for £100 each granted by Alexander Hadden, chemist, Ballater, to Thomson, and endorsed and delivered by him to the defenders. The pursuer is a creditor of Thomson to the extent of £12, and he also represents qua trustee creditors to the extent of £600, and he averred that the bills were endorsed and delivered to the defenders within sixty days of Thomson's bankruptcy in satisfaction of a pre-existing debt. The defenders replied that the bills were endorsed to them for value, and they pleaded that the action was incompetent. Sheriff-Substitute Robertson held that as trustee the pursuer had no title to sue, no power being given to him in the trust deed. He was, however, of opinion that the pursuer, as a creditor, had a right to call the transaction in question, but thought he could not combine the two characters in his summons, and dismissed the action with expenses, reserving the right to the pursuer to bring an action solely at his individual instance as a creditor.—Sheriff Crawford, on appeal, recalled this interlocutor, and gave decree for £11 4*s*., being the amount of the debt due to the pursuer as a creditor of the bankrupt, with expenses. He agreed with the Sheriff-Substitute that the pursuer's title to sue as trustee was bad, but he did not think that that vitiated his title to insist on the action as a creditor. The defenders appealed to the First Division, who to-day recalled the Sheriff's interlocutor, and dismissed the action with expenses in both Courts, holding that the pursuer had no title to sue as trustee, and that a creditor's right in this case was to have the endorsation of the bills reduced, and that could only be done by an action of reduction in the Court of Session

EDINBURGH AND GLASGOW CHEMISTS AT LOCH LOMOND.—Mr. James McGlashan, 60, Dalry Road, Edinburgh, has secured good prints of the photograph of the joint excursion party at Tarbet, Loch Lomond, on June 17 last, and anyone interested may obtain a copy on application.

ENGLISH NEWS.

THE OFFICE OF PUBLIC ANALYST IN YORKSHIRE.—The Sanitary Committee of the West Riding of Yorkshire County Council have further considered the question raised as to the desirability of appointing a public analyst for the Riding as a separate officer. In their report, submitted to the Council meeting of Wednesday, the Committee stated that the present public analyst, Mr. A. H. Allen, of Sheffield, was appointed by the West Riding justices in April, 1877, at an annual salary of £250, a fee of 6*s*. for every sample submitted, and 3*d*. per mile travelling allowance when required to attend court in support of his certificate. These terms have remained unaltered until the present time. The increase of work since the County Council has been in existence is shown by a return of salaries and fees paid to Mr. Allen during the past seven years, the total remuneration (exclusive of a small sum paid for railway travelling) being as follows:—1890, £317 10*s*.; 1891, £344 4*s*.; 1892, £336 8*s*.; 1893, £433 8*s*.; 1894, £681 18*s*.; 1895, £731 12*s*. 6*d*.; 1896, £830; total for seven years, £3675 17*s*. In consequence of such increased work the Committee are informed that the public anaylst has made such arrangements by additional accommodation and staff as has enabled him effectually to carry on his work expeditiously and efficiently, and also to meet the further increase which the policy of the Council will render inevitable. Mr. Allen's engagement cannot be set aside without the sanction of the Local Government Board, and there exists no ground personal to Mr. Allen upon which the Committee could demand or suggest his retirement. The Committee has unanimously come to the conclusion that it is not expedient at the present time to consider the appointment of a public analyst as a separate officer of the County Council, to devote the whole of his time to the duties of that office. They recommend that the district of the county analyst should comprise the whole of the administrative county registration boroughs entitled by law to appoint a public analyst.

THE FOOD AND DRUGS ACT IN THE WEST RIDING.—Mr. A. H. Allen, Public Analyst to the West Riding of Yorkshire County Council, in his quarterly report to that body, states that during the last three months he has analysed 639 samples. He is pleased to find that apparently certain forms of adulteration which were not long since rife have now nearly, if not wholly, disappeared. He adds that the pecuniary gain to the inhabitants of the Riding by preventing the sale to them of adulterated and diluted articles at full price must be incomparably greater than the cost of carrying out the Act.

THE STRENGTH OF SWEET SPIRIT OF NITRE.—The last quarterly report of the Nottingham Borough Analyst (Mr. S. R. Trotman) shows that he has analysed ten samples of laudanum and ten samples of sweet nitre. All the samples of laudanum were pure, and eight of the samples of sweet nitre were adulterated. When the report was read at a meeting of the Nottingham Town Council, the Town Clerk remarked that he thought there ought to be some qualification with regard to the sweet nitre samples. It seemed very difficult to keep sweet spirit of nitre for any length of time without the evaporation of some of the component parts, and the Corporation only proceeded in two of these cases. The word "adulteration" was not quite right; the sweet nitre lost its quality through being kept so long.

"THE CHEMISTRY OF AIR, FIRE, AND WATER" was the title of a series of lectures delivered at the Norwood Technical Institute during the spring by Professor Vivian B. Lewes, M.A., B.Sc. (Royal Naval College, Greenwich). The lectures were well attended, and the illustrative experiments were extremely successful, while Professor Lewes added to his high reputation as a brilliant lecturer. The examination which followed the course was taken by thirty students, and the result must be considered extremely satisfactory, as the examiner (R. M. Lewis, M.A., B.Sc., Downing College, Cambridge) reports twenty-nine students as successful, and nineteen of these as having passed "with distinction." He says: "All the candidates had a sound acquaintance with the facts and principles set forth in the syllabus. The questions were on the nature and composition of the atmosphere, on combustion and explosion, on the manufacture of coal gas, and on the physical properties of water, etc. The answers were accurate, neatly written, and well expressed. Nineteen candidates out of the thirty obtained over 70 per cent. of marks.

OBITUARY.

WILLIAMS.—On June 13, William Williams, Chemist and Druggist, Liverpool. (Aged 45.)

CRAWSHAW.—On June 25, Norman Crawshaw, Chemist and Druggist, late of Liverpool. (Aged 63.)

HARDY.—On June 25, Joseph W. Hardy, Chemist and Druggist, Malton, Yorks. (Aged 45.)

GEE.—On June 28, George Gee, Chemist and Druggist, Sandbach. (Aged 60.)

JONES.—On July 2, John Thomas Jones, Chemist and Druggist, Cardiff. (Aged 61.)

NEW REMEDIES.

[*The notes given under this heading embody recent suggestions in therapeutics. They cover both new drugs and preparations, and old ones under new aspects. The word "parts" is used to represent parts by weight, both for solids and liquids.*]

RESEDA AS A VERMIFUGE.—A strong decoction of the flowers of reseda, given to a patient fasting, who was infested with tænia, and followed by a strong dose of castor oil, resulted in the evacuation of the entire worm. It appears that the popular reputation as a vermifuge which reseda has enjoyed in Russia is well founded (*Rev. Med. Pharm.*, iii., 75).

PEPSIN IN ENURESIS.—Three cases of enuresis—two in children and one in an adult—which were cured by pepsin combined with iron, are recorded by Norway. In the former cases the formula employed was:—Liquor ferri perchlor., ♏ii.; acid. nitro-hydrochlor. dil., ♏ii.; glycerin., ♏x.; ess. pepsin, ʒss.; aquam ad. ʒj., t.d.s. The adult case took a similar combination in a larger dose (*Lancet*, 1/96, 907).

SYNOVIAL EXTRACT IN RHEUMATOID ARTHRITIS.—A new animal extract has recently been tried by Dr. Hyde, of Buxton, for chronic intractable cases of rheumatic joint trouble. The extract is obtained from fresh articular cartilages and synovial membrane of healthy animals by means of glycerin, 1 minim being equal to 1 grain of the fresh animal substance, and 15 to 30 minims being given three times a day. Good results have been obtained already, but the method has not yet been sufficiently tried to warrant any definite conclusions, the writer suggesting that similar experiments should be tried by other practitioners.

PERUVIAN BALSAM IN SCABIES.—Julien and Descouleurs have treated over 300 cases of itch by means of the local application of Peruvian balsam. They find that the acarus much more readily succumbs to the influence of this drug than to the fumes of sulphur. The balsam is simply painted on the surface, and then gently rubbed into the whole body with the hand. The patient remains thus all night, and takes a warm bath in the morning, when the cure is generally complete. Where a repetition of the process is needed, no irritation of the skin follows (*Lancet*, 1/96/1101).

MALAKIN IN ACUTE RHEUMATISM.—According to Korotkoff and Oussoff, malakin is superior to salicylate of sodium in the treatment of acute rheumatism, being more rapid, more certain, and free from any secondary reactions on the pulse, the digestion, or the nervous system. The dose given was from 3 to 5 grammes per diem, curative effects being produced on the fourth or sixth day, the temperature falling and the pains disappearing (*Rev. de Thérap. Med. Chirurg.*, lxiii., 219, after *Medicin. Obos.*).

IPECACUANHA FOR BEE-STINGS.—A physician was recently attacked by a swarm of bees in Baroda and so severely stung in the hands, face, and neck, that one hundred and fifty stings were extracted from the neck alone. The swelling and pain were greatly reduced by ipecacuanha powder, which was made into a paste and smeared over the affected parts (*Ind. Med. Gaz.*).

ARECOLEINE HYDROBROMIDE AS A MYDRIATIC.—Lavigna finds that arecoleine may replace physostigmine in the production of mydriasis, a well-marked myosis occurring in five minutes after the instillation of one drop of a one per cent. solution; the action reaches its maximum in ten minutes and persists for thirty minutes. In seventy minutes the pupil is again reduced to its normal size. The repeated application of the remedy does not occasion headache (*Intern. Med. Mag.*, v., 129, after *Therap. Wooh.*).

ELDER BARK AS A DIURETIC.—Lemoine finds that an alcoholic fluid extract of the inner bark of the elder, "prepared by a special process," is a very powerful and useful diuretic. This preparation he calls "sambucium," and gives it in doses of 5 to 15 grammes three times daily. The increase in the volume of the urinary secretion which follows is very marked, and, with these doses, was accompanied by no unpleasant after effects (*Bull. Gén. de Thérap.*, cxxx., 252).

CORRESPONDENCE.

"CONDY'S FLUID."

Sir,—I received by this morning's post a printed "Apology and Undertaking with Costs," for the sale of disinfecting fluid, labelled as "Condy's Fluid," such fluid not being of the manufacture of Condy and Mitchell, Limited. It has often occurred to me that the seller in these cases is more sinned against than sinning. Fortunately or unfortunately, "Condy's Fluid," or simply "Condy," has become popularised as the name for permanganate disinfectant. Our text-books speak of "Condy's Fluid"; some refer to it generally in connection with permanganates, while others identify it with the potassium salt. Medical men and dentists speak of solution of permanganate of potash as "Condy," and their verbal prescriptions are almost invariably for "Condy's Fluid." The "domestic" or "science" column of our weeklies tells the anxious inquirer to wash with "Condy's Fluid," and sometimes even gives a hint for the preparation of the article. The result of all this is that the chemist is frequently asked for "Condy's Fluid," "Condy's Fluid Crystals," or "Crystals for making Condy's Fluid." He has good grounds for believing that his customer wants permanganate of potash or its solution—not a secret preparation said to contain no permanganate of potash, and his offence can only be a technical one when he unwittingly designates the article by the name by which it is known to the public.

Edinburgh, July 2. A. P. S.

LIQ. BISMUTHI ET AMMONII CITRATIS.

Sir,—I am glad to comply with Mr. Dutton's request for a copy of the prescription referred to in my last letter, because the matter needs further investigation before it can be said to be explained.

℞ Sodæ Bicarb	ʒiii.
Acid. Hydrocy. Dil	gtt. xxx.
Liq. Bismuth. Am. Cit	ʒvi.
Sp. Chloroformi	ʒiss.
Aquæ	ad vi.

Mr. Dutton is perfectly correct so far as his remarks apply to a mixture of 1 drachm of sodium bicarbonate with 6 fl. drms. of liq. bismuthi and distilled water to 6 fl. oz.

Taking the specified quantity of liq. bismuthi, and adding to it in successive quantities a saturated solution of sodium bicarbonate, I find that up to ʒiiss. of the latter a clear mixture is temporarily formed; with the ʒiii. prescribed the liquid clouds at once; with ʒii. precipitation begins within an hour; with only ʒi. became faintly opalescent only after standing for sixty-four hours.

Six fl. drs. of liquor bismuthi et am. cit. B.P., 1885, contain 30 grains of citrate of bismuth, and therefore citric acid enough to yield 16 grains of ammonium citrate. To bring it to the same strength in that respect as the liquor of the 1867 Pharmacopœia, an addition of 21 grains of ammonium citrate, or 162 minims of liquor ammoniæ citratis, is required.

Such an addition to the mixture containing ʒii. sod. bicarb. completely redissolved the precipitate after standing for an hour or so, the liquid remaining clear and limpid for three days. It failed to produce the same effect on the mixture containing ʒiii., and a second quantity was added, also without effect. This accords with previous experience that a solvent may prevent precipitation for a time and yet be incompetent to redissolve a precipitate when fully formed.

So far as I can determine, the mixture most permanently clear is that with ʒii. sodium bicarbonate to ʒvi. fl. liq. bismuthi containing 37 grains of ammonium citrate; but with ʒiii. sodium bicarbonate, the larger amount of ammonium citrate, if added at the beginning, does not prevent ultimate precipitation; but only retards it.

The 6 fl. drs. of solution of bismuth should contain 18 grains of oxide of bismuth, equivalent to 20 grains of carbonate, and so far as any double decomposition between it and sodium bicarbonate is concerned, it seems that a very much smaller quantity than ʒi. of the latter would suffice, looking to the combining numbers, viz., 519 for carbonate of bismuth as against 84 for sodium bicarbonate.

These questions arise—Does the increased quantity of sodium bicarbonate decompose the ammonium citrate? Is sodium citrate less active than the ammonium salt as a solvent of bismuth carbonate?

The difficulties in the way of an exact determination are great, but perhaps not insuperable. I hope what I have written will avert, in future, the hasty condemnation of a dispenser who fails to send out clear the prescription I have quoted.

Dover, July 6, 1896. J. FRED. BROWN.

OXALIC ACID OR SALTPETRE.

Sir,—The past few weeks have furnished an interesting chapter in the history of oxalic acid. Read in the light of the remarks made by a correspondent in your last, it appears to form a striking demonstration of the truth that "a little knowledge is a dangerous thing." I presume the sorrel which caused the death of the child was a species of *Rumex*, and not the wood sorrel (*Oxalis*), with which many botanists refresh themselves on a warm day, and which some of the older books recommend as the basis of an agreeable conserve. There is one phase of the subject, however, which must be the cause of perplexity to some portion of your readers at least, namely, the accidental administration of oxalic acid for Epsom salts. In reading the Pickwick papers, I have smiled at the excuse put by Dickens in the mouth of an unwilling juror, who, being a chemist, thereby indicates the incompetence of his apprentice as a *locum tenens*. As this accident has repeatedly happened in England of late, and, so far as I know, is never reported from North Britain, where saltpetre is not unfrequently a disastrous equivalent for the aperient dose, perhaps some reader can explain why this should be, as the oxalic acid supplied to chemists in the south may have a greater physical resemblance to the sulphate of magnesia than any we get here.

Dundee, July 4, 1896. SCOTCH CHEMIST.

THE COMPOSITION AND ANALYSIS OF COMMERCIAL CREAM OF TARTAR.

Sir,—I have read with considerable interest the report of Mr. A. H. Allen's paper on the above subject, which appeared in last week's Journal. The paper contains much valuable information, but I wish to point out the very misleading statements contained in 2 (*a*) of the process which he proposes as the Pharmacopœia test of purity. "Each C.c. of deficiency" certainly does not represent either "calcium tartrate," "calcium sulphate," or "neutral potassium tartrate"; nor do I think that "any excess points to the presence of acid potassium sulphate."

July 6, 1896. "PHARMACIST."

A DISPENSING DIFFICULTY.

Sir,—Can any reader of the *Pharmaceutical Journal* inform me as to the correct way of dispensing the following prescription?—

Ol. Pini Sylvestris	℥ss.
Lin. Pot. Iod. *c.* Sapone	ad ℥ii.]

This was prescribed by a London physician, and was sent out by a first-class dispensing house in the form of a solid opaque jelly. It was evidently prepared by heating, as the hollow of the stopper formed a "mould" for the contents. I have tried several methods, but have failed to get them to form a similar preparation.

June 30, 1896. "DUBLIN."

ALUMINIUM WEIGHTS.

Sir,—My attention was yesterday arrested by what seemed a singular occurrence. I happened to place several aluminium drachm weights alongside a brass one in the scales, leaving them there for a few minutes. On going to remove them, to my surprise I found the aluminium ones all beautifully fringed on the upper edge with small white feathery crystals, which on being collected weighed two grains. I then examined the drawer containing the others, and found the same thing had occurred there. The atmosphere at the time was very sultry, which may account for the occurrence. It would be interesting to know if any other one has had a similar experience. I enclose small sample of the crystals.

Elgin, N.B., July 7, 1896. WM. ROBERTSON.

A SPURIOUS MARANHAM JABORANDI.

MR. JOHN C. UMNEY, who is examining the spurious jaborandi leaves described by Mr. E. M. Holmes in last week's Journal, writes to say that chemical examination shows the leaves to contain about 0·1 per cent. of an alkaloid which is apparently not pilocarpine.

PUBLICATIONS RECEIVED.

TECHNICAL EDUCATION: A national necessity; its uses and advantages. By HENRY CORBY, B.A., M.D., M.Ch., F.O.S.L. Pp. 38. Price 3*d*. (J. Mahony, Cork Printing Hall, 36 and 37, Cook Street.)

BEGINNER'S GUIDE TO PHOTOGRAPHY, showing how to buy a camera and how to use it. By a Fellow of the Chemical Society. Pp. 119. Price 6*d*. (Perken, Son, and Rayment, 99, Hatton Garden, London, E.C.)

ANSWERS TO QUERIES.

[*Queries addressed to the "Editorial Department*, 17, *Bloomsbury Square, W.C.," will be replied to in the Journal as early as possible after receipt, but the Editor cannot undertake to reply to them through the post, nor is it always possible to publish answers the same week. Questions on different subjects should be written on separate slips of paper, each of which should bear the sender's name or initials. Readers requiring working formulæ for special preparations, and intimating their wants to the Editor, will be assisted as far as may be practicable. The word "parts," when used in formulæ, invariably indicates parts by weight.*]

PLANT IDENTIFIED.—Your specimen is—*Allium vineale*, var., *compactum*. [*Reply to* L. ROBERTS.]

BOTANICAL SPECIMENS.—Your specimens are—(1) *Elodea canadensis*; (2) *Sedum reflexum*; (3) *Lythrum salicaria*. [*Reply to* "SECUNDUS."]

PLANT IDENTIFIED.—The specimen you send is "*Inula helenium*." We have no objection to being "troubled" in this way. [*Reply to* L. A. ROBERTS.]

"ARCHIVES OF RADIOGRAPHY."—Is this the title of the paper you mean? It is published by the Rebman Publishing Company, Strand, W.C. [*Reply to* W. PILKINGTON.]

BOTANICAL TEXT-BOOK.—One of the best introductory text-books of botany for pharmaceutical students is Scott's 'Structural Botany' (A. and C. Black, 3*s*. 6*d*.). [*Reply to* A. J. H.]

ARSENICAL FLY-PAPERS.—Certainly; The sale of any preparation containing arsenic must be conducted in accordance with the provisions of the Pharmacy Act, Section XVII. [*Reply to* H. WOOD.]

OPIUM.—Messrs. A. S. Watson and Co., of Hong-Kong, could doubtless supply you with specimens of any kind of Chinese opium. It is difficult to say where you are likely to obtain the French variety you speak of, but you might try advertising. [*Reply to* G. W. BLYTHE.]

SKELETON LEAVES.—One process is to dip the leaves into a boiling alkaline solution, regulating the time of immersion according to the toughness of the leaves and the character of the epidermis. The loosened epidermis and cellular tissue are washed away, and the leaves immersed for a short time in clear solution of chloride of lime or of peroxide of hydrogen, or a mixture of both, to remove colouring matter and whiten the fibres. Capsular fruits are, however, best treated by prolonged maceration in rain water. Another process is to add sulphuric acid to the soft water in which the leaves are macerated, and then to bleach the skeleton in the usual way. [*Reply to* "MAJOR."]

SYR. HYPOPHOS. CO., B.P.C.—This is an unsatisfactory preparation, as it does not keep well for any length of time, though if made with commercially pure ingredients it will keep without becoming cloudy or depositing for three or four weeks. In the case of any similar preparation exposure to air results in oxidation and consequent precipitation of ferric hypophosphite. Martindale says the following formula (American) yields a product much resembling the original preparation:—Dissolve, by the aid of gentle heat, iron pyrophosphate, 15 grains; sodium hypophosphite, 45 grains; strychnine (dissolved with a drop or two of diluted sulphuric acid), ½ grain; manganese hypophospite, 15 grains, and quinine sulphate, 5 grains, in distilled water, 1 ounce. When solution is complete add to syrup *q.s.* to weigh 16 ounces. *Dose.*—One teaspoonful. [*Reply to* "ASSISTANT."]

CORRECTION.

JABORANDI AND ITS ALKALOIDS.—In last week's Journal, on page 2, column 1, line 15, the word "insoluble" should be "soluble."

COMMUNICATIONS, LETTERS, ETC., have been received from Messrs. Atkinson, Bayne, Brown, Calderwood, Cumming, Edwards, Fell, Forret, Gossage, Graeflin, Kitchin, Marsden, Morley, Naylor, Parry, Pilkington, Reynolds, Roberts, Robertson, Schröder, Sharp, Smith, Statton, Symes, Tayler, Umney, Wardleworth, Welford, Wild, Wood, Wright.

HYOSCINE.

The therapeutic application of the mydriatic alkaloid isolated by Ladenburg* in 1880 from the "amorphous hyoscyamine" obtained in the preparation of crystallisable hyoscyamine from henbane, and the introduction of hyoscine hydrobromide into the German Pharmacopœia in 1890 soon gave occasion for the production of this alkaloid on a large scale, and the description given by Ladenburg of its characters and chemical composition was for a time generally accepted without question. He represented hyoscine as being isomeric with atropine and hyoscyamine, but differing from those alkaloids in not breaking up as they do into tropic acid, $C_9H_{10}O_3$, and tropine, $C_8H_{15}NO$, but into tropic acid and pseudo-tropine, a base of the same composition as tropine but differing in its boiling point, its platino chloride, and other characters.

Subsequently E. Schmidt in examining commercial hyoscine hydrobromide found that the composition of the base in it did not agree with the formula $C_{17}H_{23}NO_3$ assigned to hyoscine by Ladenburg, but that it was represented by the formula $C_{17}H_{21}NO_4$.† He found small quantities of the same base in belladonna, stramonium and duboisia; in scopola root a larger amount and, ultimately, that commercial hyoscine hydrobromide was essentially a salt of an apparently new alkaloid to which he then gave the name of scopolamine,‡ as being different from hyoscine.

Still later Hesse§ disputed the accuracy of the formula $C_{17}H_{23}NO_3$ assigned to hyoscine by Ladenburg, and also brought forward evidence to show that the base named scopolamine by E. Schmidt is nothing more than hyoscine. Last year Hesse‖ announced that the salt known in commerce as hyoscine or scopolamine hydrobromide is a mixture of the salts of two bases, one of them identical with the hyoscine of Ladenburg, but having a composition represented by the formula $C_{17}H_{21}NO_4$, the other—atroscine—being an isomer of hyoscine, but crystallisable and yielding different products of decomposition, as well as salts having characters different from those of hyoscine salts.

In consequence of these discordant views a dispute has arisen as to the questions whether the composition of hyoscine is correctly represented by the formula $C_{17}H_{21}NO_4$, or by that assigned to it by Ladenburg—whether or not the alkaloid obtained by Schmidt from the root of *Scopola atropoidis*, and named by him scopolamine is identical with hyoscine—lastly, whether the hyoscine hydrobromide of commerce contains more than one alkaloid.

Schmidt agrees with Hesse as to the composition of the base in the commercial salt, but without going so far as to dispute Ladenburg's formula for hyoscine, or to admit that scopolamine is really identical with hyoscine, while, on the other hand, he does not agree with Hesse as to the existence of atroscine in the hyoscine hydrobromide of commerce.¶

In a further communication** Dr. Hesse points out that his investigation of Ladenburg's hyoscine and that of scopolamine by Schmidt have shown a perfect agreement between the statements of data on both sides, with the sole exception of some melting-point determinations, and that the observed differences in these melting-points are referable to the modes of determination. Hence he concludes that the scopolamine of Schmidt and the hyoscine of Ladenburg are identical. He further holds that this conclusion will be arrived at by anyone who acquaints himself with the characters of hyoscine or scopolamine by actual preparation and that the identity was openly admitted by E. Merck,* who first prepared hyoscine on a large scale, and afterwards scopolamine. Hesse therefore contends that the name scopolamine applied by Schmidt to the long-known hyoscine must be dropped as superfluous and productive of confusion in regard to mydriatic alkaloids. He also shows that not only is Schmidt responsible for this confusion, but Ladenburg also in seeking to maintain his original formula $C_{17}H_{23}NO_3$, when he could easily satisfy himself of its inaccuracy by examination of the hyoscine hydrobromide and other crystallisable salts of the base which are prepared on a large scale and in a state of absolute purity by Merck.

Hesse maintains his previous contention that hyoscine—as understood by Ladenburg—does not exist either in henbane seed or in the preparations obtained from that source. The base has the formula $C_{17}H_{21}NO_4$. He explains that when preparing the base from henbane seed and finding no difference between it and the hyoscine prepared by Merck, he so far trusted to Ladenburg's statement of its formula that he did not make an analysis, and even disregarded the discrepancies in Ladenburg's memoir on the subject. That is the explanation of his having in 1890 given the formula $C_{17}H_{23}NO_3$ for hyoscine, and also of his having at first accepted Schmidt's statements as showing scopolamine to be a new alkaloid different from hyoscine.

It was not until 1891 that Hesse was led to prepare hyoscine again from henbane seed, and to examine it more closely in comparison with Ladenburg's base prepared by Merck. He then found there was not, in either case, any foundation for the formula $C_{17}H_{23}NO_3$. Unfortunately, the optical examination of the samples was not carried out, and it may have been on that account that a very small quantity of alkaloid obtained from a sample of Trommsdorff's hyoscine hydriodide could not then be explained. Hesse suggests that it was probably the atroscine which he has since obtained from commercial scopolamine hydrobromide.

In reference to the preparation of alkaloid from henbane, Hesse states that the seed should be ripe, as it then always contains the same alkaloid, though the amount is not quite uniform. He considers that the alkaloid is present in the kernel of the seed and not in the husk, so that the seed requires to be thoroughly broken up for its extraction, then treated with cold petroleum spirit to remove about 25 per cent. of greenish-yellow fat oil, which will contain traces of alkaloid that may be separated by shaking with dilute sulphuric acid. From the residual portion of the seed the alkaloid is extracted by means of ether, alcohol or chloroform. The solutions, concentrated to a small bulk, give a copious crystallisation of hyoscyamine and, when that is completely separated, the mother liquor yields what was formerly known as "amorphous hyoscyamine." It was from such a product that Ladenburg separated hyoscine by means of gold chloride in 1880, and showed that the hydrobromide is a readily crystallisable salt. In practice hyoscine is separated as hydrobromide, which is less soluble in alcohol than the hyoscyamine or atropine salts.† Atroscine cannot be separated in that way because the solubility of its hydrobromide is nearly the same as that of the hyoscine salt containing $3H_2O$. If the amorphous hyoscyamine contained an alkaloid different from those mentioned, but isomeric with hyoscyamine, and forming a hydrobromide having the same characters as the hyoscine salt (or as Ladenburg terms it, isidiomatic to that base), it should be present in commercial hyoscine hydrobromide. But according to Hesse,

* *Ann. Chem. Pharm.*, 206, 299.
† *Pharm. Journ.* [3], xx., 890.
‡ *Pharm. Journ.* [3], xxii., 267, 1006, 1021.
§ *Pharm. Journ.* [3], xxiii., 181, 221.
‖ *Pharm. Journ.*, liv., 822; lvi., 289.
¶ *Pharm. Journ.*, lvi., 341.
** *Apotheker Zeitung*, 1896, No. 45.

* *Annual Report on the Year* 1894, p. 15.

† Hyoscyamine hydrobromide requires for solution 2·2 parts alcohol of 0·82 s.g. at 15° C. Hyoscine hydrobromide requires 22·5 parts. Atropine hydrobromide is much more soluble than the hyoscine salt.

that product does not contain a trace of such alkaloid, and consequently he concludes that there is no such thing as isidiomatic hyoscine.

In the preparation of hyoscine from scopola root, extraction with petroleum spirit is unnecessary, as the root does not contain much fat or oil. But a preliminary extraction with ether is desirable in order to remove scopoletin.* The residual root then contains scopolin,† together with the alkaloids, which can be extracted in the same way as from henbane seed or in the form of hydrobromides. The final result is the same in both cases, but here again, although there is no isidiomatic hyoscine, there is an isomer of hyoscine—atroscine—associated with the actual hyoscine obtained.

Hesse therefore concludes that there is no such thing as isidiomatic hyoscine, and that the formula $C_{17}H_{23}NO_3$, erroneously assigned to hyoscine, must be replaced by $C_{17}H_{21}NO_4$, which is, moreover, in accordance with most of Ladenburg's analytical data.

IDENTIFICATION AND SEPARATION OF THE PRINCIPAL ACIDS CONTAINED IN PLANTS.‡

BY L. LINDOT.

The reactions which enable us to distinguish the vegetable acids are not numerous, and often uncertain in their application; and if we can characterise tartaric acid—thanks to the insolubility of its potassium salt in the mixture of alcohol and ether—we are more embarrassed if it is requisite to isolate the other acids, and especially the citric and malic, so frequently present in vegetable tissues.

When studying the compounds of these acids with quinine and cinchonine, I have found that the resulting salts, and especially the acid salts, present differences of solubility in methylic alcohol, such that it is easy to distinguish citric and malic acids and to separate them from vegetable juices.

I. Cold methylic alcohol at 95° Gay-Lussac dissolves only 0·3 per cent. of acid quinine citrate; so that if we add quinine to a methylic solution of citric acid, at 2 or 2·5 per cent., this alkaloid is dissolved at first, then giving rise on stirring to a bulky crystalline precipitate of acid citrate, which may extend to 9·3 per cent. of the theoretical quantity. An excess of quinine, with reference to the composition of the acid salt, redissolves the precipitate, and then ultimately the neutral citrate crystallises; its solubility is greater than that of the acid citrate, and rises to 3·3 per cent.

Under identical conditions the acid quinine malate (solubility in cold methylic alcohol at 95° Gay-Lussac, 8·2 per cent.) and the neutral malate (solubility 8·0) remain in solution. The presence of malic acid slightly interferes with the precipitation of acid quinine citrate, and when in a mixture of the two acids the quantity of malic acid represents 25, 50, 100, or 200 per cent. of the quantity of citric acid, the weight of the acid quinine citrate obtained is not more than 99, 97, 94, or 89 per cent. of the citrate which would be obtained in a liquid free from malic acid.

Under the same conditions the acid quinine oxalate (solubility 9·2 per cent.) and the neutral oxalate (solubility 8·2 per cent.) remain equally in solution; but the oxalic acid increases the solubility of quinine citrate in larger proportions than does malic acid.

The precipitate of quinine citrate may be confounded with the quinine acid tartrate (solubility 2·4 per cent.) and the acid succinate (solubility 1·2 per cent.).

II. Cinchonine dissolved in methylic alcohol precipitates malic acid under conditions identical to those in which quinine precipitates citric acid. However, the solubility of acid cinchonine oxalate in methylic alcohol at 95° Gay-Lussac and in the cold, which is 2·5 per cent., is higher than that of quinine citrate; but the other salts of cinchonine are so soluble that the precipitation above mentioned may be considered as characteristic of malic acid. Acid cinchonine tartrate is, in fact, soluble at 20·6 per cent.; the acid nitrate, the acid oxalate, and the acid succinate do not crystallise until their solutions have been brought to the state of syrup. The tartaric, citric, oxalic, and succinic acids, if mixed with malic acid, increase in a striking manner the solubility of cinchonine malate in methylic alcohol; it is thus that citric acid, added to malic acid in the proportions of 20, 50, 100 per cent., hinders the tenth, the half, and even the whole of the malic acid from crystallising as a cinchonine salt.

III. To apply the foregoing reactions to the extraction of the acids of a vegetable juice, it must first be evaporated in vacuum, and re-dissolved in methylic alcohol as concentrated as possible. If the juice contains potassium bitartrate and free tartaric acid, it must be treated with alcohol and ether to separate the tartar, and precipitate the tartaric acid in the state of bitartrate by a limited addition of potassa to the same ethero-alcoholic liquor. To eliminate the excess of potassa, we precipitate all the acids by basic lead acetate, and liberate them again with hydrogen sulphide. It is proper to operate in the same manner if the juices contain an excessive quantity of sugars or foreign matters.

The concentrated acids being dissolved in methylic alcohol, we take a known volume of the liquid, which we dilute with methylic alcohol, so that the solution may contain 2·5 per cent. of acid, and we add to the liquid increasing quantities of quinine in powder, until after being stirred for some time it sets into a crystalline mass. The quantity of quinine added should not exceed 160 to 170 parts to 100 parts of the citric acid supposed to be present. We must, in fact, avoid adding an excess of quinine, which would dissolve—momentarily at least—the acid citrate, and form neutral citrate, which is more soluble. When the proportion of quinine which must be added has thus been determined, we treat the residue of the liquid with the calculated quantity of quinine. After settling for twenty-four hours we filter and re-commence the same operation upon the mother-liquor.

If the liquid does not precipitate under these conditions—that is to say, if it contains no citric acid—we search for malic acid, by adding in 1 part of the methylic liquid, as concentrated as possible, increasing quantities of cinchonine, the maximum dose of which may be fixed at 140 to 150 per cent. of the estimated quantity of malic acid.

If the two acids are simultaneously present, when the liquid is no longer precipitated by quinine we add cinchonine, the action of which is not interfered with by the excess of quinine.

It is easy to recover the corresponding acids from the salts of quinine and cinchonine obtained. It is sufficient to add to the aqueous solution of these salts ammonia, to filter off the alkaloids, to precipitate the liquid with basic lead acetate, and then decompose the precipitate with hydrogen sulphide. Or we may render both the acid and the base insoluble by means of baryta, exhaust the dried precipitate with alcohol, and decompose the barium salt with sulphuric acid.

By these methods I have been able to extract the citric acid contained in lemons and gooseberries, and extract the malic acid contained in cherries.

* The composition of the substance is represented by the formula $C_{10}H_8O_4$, but Hesse finds its melting point 203° C., while Eykman gives about 198° C.

† This is a glucoside, and not the substance named scopoline by Schmidt, which is the base Hesse obtained by breaking up hyoscine and named by him oscine.

‡ *Compt. rend.*, cxxii., p. 1185. Translation in *Chemical News*.

LIVERPOOL REVISITED.

NOTES FOR VISITORS AT THE APPROACHING CONFERENCE OF PHARMACISTS.

(*Continued from page* 27.)

PHARMACY AND PHARMACISTS IN LIVERPOOL.

During the twenty-six years since the last meeting of the British Pharmacentical Conference in Liverpool, things pharmaceutical have by no means been at a standstill. As has already been shown, the Liverpool Chemists' Association, which attained its majority in 1870, had early grasped a proper idea of its responsibilities in educational matters, and had striven to be equal to them, Liverpool pharmacists of that day proving by their actions the accuracy of Jacob Bell's description of them as "a collection of men than whom there was none in the country having a greater amount of public spirit and energy." In addition to free lectures on chemistry and botany, apprentices or associates of the Chemists' Association had the use of a library which at that time was rightly considered one of the best and most complete in the provinces, whilst an excellent museum of materia medica and botany—well supplied with specimens from the Pharmaceutical Society's museum in London, and by the generosity of local wholesale houses—enabled them to obtain a good practical acquaintance with the official drugs and plants. The facilities for practical or field botany having been found wanting the Council of the Association, at the suggestion of their librarian, Mr. T. D. Walker, encouraged the formation of parties of students for country excursions in search of indigenous medicinal plants, and this resulted in the founding, in 1860, of the Liverpool Naturalists' Field Club, which has done an immense amount of good steady work on the flora of the surrounding district, and still exists. One has only to look back into old numbers of the *Pharmaceutical Journal* to get an idea of the character of the papers and communications presented at the meetings of the Chemists' Association from its commencement down to the present day, and the opinion formed by the reader will doubtless coincide with that expressed by Professor Attfield—that the papers contributed to the Liverpool meetings are scarcely, if at all, excelled by those at the parent Society's meetings in Londo

An organisation now absorbed into the Chemists' Association, the Liverpool Registered Chemists' Association, did a large amount of work in connection with trade questions, meeting at irregular intervals when any pressing trade question had to be discussed, and enjoying the support of a very large and influential proportion of the chemists on the Register. Amongst its most vigorous members were Dr. Symes, Mr. Hocken, Mr. Bain, and the late Mr. R. Parkinson, who all became members of the Chemists' Association on the amalgamation of the two bodies, in those cases where they had not been so previously.

The last and youngest organisation to be mentioned is the Pharmaceutic.l Students' Society, formed some ten years ago to provide assistants and students with the means of social and scientific intercourse. The first president was the late Mr. Belcher Thornton, under whose guidance the Society progressed by leaps and bounds, rapidly making headway in spite of a large amount of discouragement from some few persons in high places; this opposition was, however, only temporary, and now it may safely be said that there is nothing but good feeling between the members of the different local associations and societies. The climax in the history of the Students Society was reached when its headquarters were removed some three or four years since to University College, where it has been carrying on useful and busy work ever since, the papers and lectures of the winter sessions being of a high class, both scientifically and practically.

THE ADELPHI HOTEL—THE CONFERENCE HEADQUARTERS.

The oldest pharmaceutical firm in Liverpool is without doubt that of Messrs. Clay and Abraham, chemists to the Queen, of 87, Bold Street. It was founded in July, 1845, by Mr. Robert Clay, and he took into partnership Mr. John Abraham, the head of the dispensing department of the Liverpool Apothecaries' Company, who had previously been with Messrs. Allen and Hanburys, of Plough Court,

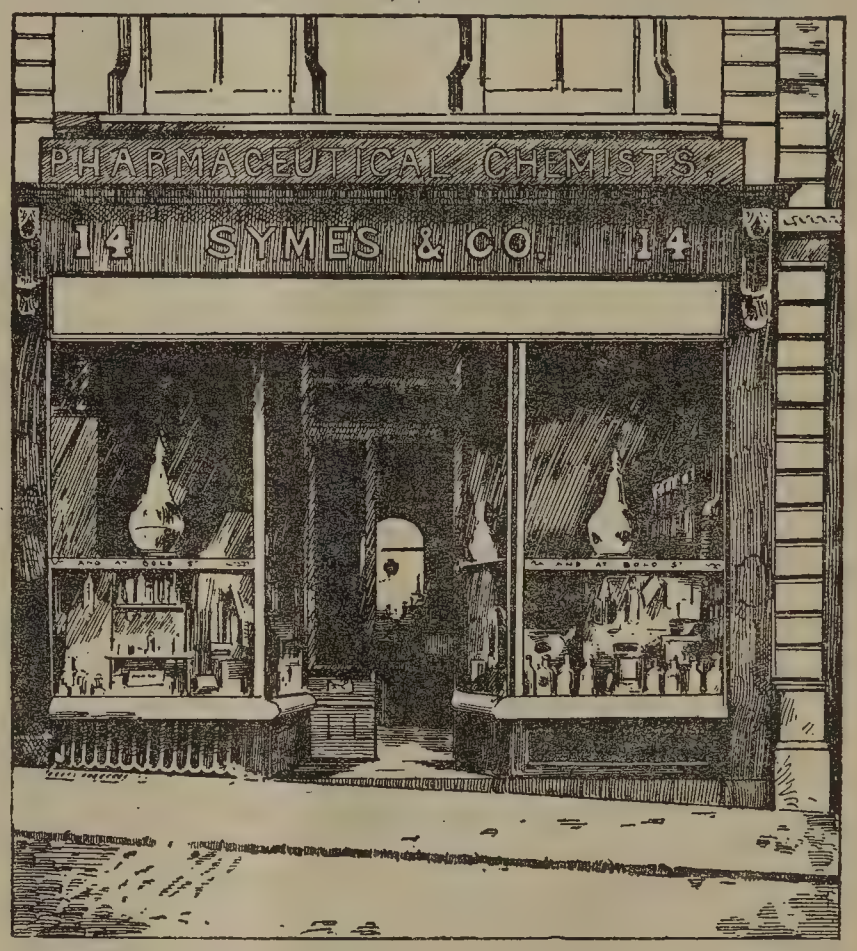
London. The entire management of the pharmacy devolved upon Mr. Abraham from the very outset, as Mr. Clay was engaged almost continuously in superintending a wholesale drug business in another part of the town. At Mr. Clay's death, in 1876, Mr. Abraham became sole proprietor, the business passing in 1881, at his death, to his two sons, Mr. T. Fell Abraham and Mr. Alfred C. Abraham, who carry it on at the present time in the same thorough and high-class fashion as their father did before them. The general business is purely dispensing and pharmaceutical, the arrangements and system of checking being such as few pharmacies in the provinces can boast of, in addition to which all galenicals and many special preparations used in the business are produced in a well-equipped laboratory under the pharmacy superintended by Mr. Alfred Clay Abraham, whose reputation as a chemist and pharmacist is sufficient guarantee of the quality of the preparations turned out under his supervision. The late Mr. John Abraham was an active member of numerous scientific and philanthropic societies, a founder of the Liverpool Microscopical Society, of the Naturalists' Field Club, of the Tradesman's Guild, was on the board of the Polytechnic Society, and the Council of the Pharmaceutical Society, a founder of the Chemists' Association, and

MESSRS. CLAY AND ABRAHAM'S PHARMACY.

one of the most active workers in arranging for the Conference held in Liverpool in 1870. Instances are not common of persons brought up to the profession of medicine forsaking it for the practice of pharmacy, yet this was so in Mr. Abraham's case, for he was educated as a surgeon, and left that branch of the healing art for pharmacy. The exterior of the Bold Street pharmacy remains almost identical with what it was fifty-one years ago. In 1886, Messrs. Clay and Abraham were appointed Chemists to the Queen at Liverpool.

At 14, Hardman Street, Dr. Charles Symes, the well-known councillor of the Pharmaceutical Society, manages a handsome pharmacy, established forty years since by Mr. Samuel Banner, who was succeeded by Mr. F. D. Delf, from whom Dr. Symes and Mr. J. Hallawell bought the business in 1873. Previous to this Dr. Symes had been in business at Birkenhead, and Mr. Hallawell in Brazil. Some years later they purchased a business known as Hingston's, in Bold Street, and built warehouses and offices in the rear to accommodate their export business, which had rapidly increased. Mr. Hallawell returning to South America nineteen years later, and the export part of the business being transferred into his hands, it was decided to convert the dispensing and manufacturing part of the concern into a limited liability company, so as to give the assistants an interest in the business, all subscribers to the articles of association being registered chemists, and no shares offered for general subscription.

The general character of the business is that of a dispensing and manufacturing one, with some export to India, Australia, and South Africa, and in addition a considerable business is done in fine chemicals for educational and technical purposes, whilst chemical and electric apparatus are sold to teachers and institutions. The firm has supplied the Royal Infirmary with drugs, etc., for nine consecutive years. In the London International Exhibition in 1862, Mr. Banner exhibited as part of the Pharmaceutical Society's exhibit a series of granulated effervescent preparations, which the firm continues to manufacture down to the present time.



MESSRS. SYMES AND CO.'S HARDMAN STREET PHARMACY.

Those who attended the Liverpool Exhibition in 1886, will remember the fine exhibit of the firm's fluid extracts, bismuth preparations, and native Brazilian drugs, for which the gold medal was awarded. Dr. Symes is now chairman and managing director of the company, having been elected for seven years from the date of registration.

A very old-established dispensing firm is that of John McGuffie and Co., of 24, Castle Street, originated by Mr. John McGuffie in 1846, who bought the business, which had been founded in 1793, by Edwards, Penny, and Butler.

Messrs. Thompson and Capper, homœopathic chemists, of Bold Street, Lord Street, and Rodney Street, founded in 1843 (an offshoot from the old firm of Thomas Thompson and Son) by Mr. George Thompson and Mr. S. J. Capper, were the pioneers of homœopathic pharmacy in Liverpool; at the present time this is one of the largest firms in the provinces, having branches in Manchester, Sheffield, Birkenhead, and Southport. The senior partner, Mr. S. J. Capper, is a well-known entomologist, President of the local Entomological Society since its formation in 1879, and possessor of one of the best collections of moths in the country. Mr. Isaac C. Thompson,

who is usually at the Lord Street establishment, is also well known in scientific circles, having been for many years connected with the Liverpool Microscopical Society as Secretary and President, in addition to which he is a prominent member of the Marine Biology Committee, and one of the honorary local secretaries for the forthcoming meeting of the British Association for the Advancement of Science, to be held in Liverpool in September.

Messrs. Clay, Dod and Co., of St. Anne Street, may lay claim to being the oldest wholesale manufacturing chemists in Liverpool, for the business was first established by Mr. Robert Clay in 1813 under the title of Robert Clay and Co. At first Mr. Clay resided on the premises, using the back portion of the house and garden as a warehouse, from which goods were sent out and all business transacted, but in course of time the whole of the premises were taken up by the increase of business. The title of the firm was changed after a time to Clay, Dod, and Case, as other gentlemen became associated with Mr. Clay in its management, and in 1884 it finally became Messrs. Clay, Dod, and Co. The laboratories and mills of the firm are situated in Wakefield Street. Mr. Robert Clay, who also originated the well-known dispensing business of Messrs. Clay and Abraham, was, it is believed, the first to distil chloric ether on a large scale in Liverpool, and was noted for his tinctures. Coming of an old and highly respected Liverpool family he was very popular and a good patron of the arts, being one of the founders of the Liverpool Philharmonic Society, of which he was a director to the time of his death.

Next in order of seniority must be placed Messrs. Evans, Sons, and Co., of Hanover Street, the origin of whose firm dates back to 1833, when Mr. John Evans came from London—where in conjunction with Mr. J. S. Lescher, he had founded a wholesale chemist's business five years previously—and opened a branch in Fenwick Street in a very modest way. In 1835 Mr. Thomas Bickerton Evans joined his father, on the retirement of Mr. Lescher from the Liverpool business, which henceforth was carried on as a separate concern from the London house, and later Mr. Evans' two other sons, John and Edward, came also to their father's assistance, the style of the firm being altered to Evans, Sons and Co. The business premises at the present time consist of the usual offices in Hanover Street, recently entirely rebuilt and re-modelled, a special tincture house in Wood Street, laboratories and mills in Fleet Street, and a house for sundries in Seel Street. The laboratories are supervised by Mr. Michael Conroy, the genial chairman of the Chemists' Association, well known to Conference visitors from the eminently practical papers he has read at different meetings of the British Pharmaceutical Conference. The members of the firm at present are Mr. Edward Evans and his four sons, Messrs. John J. Evans, Edward Evans, junior, William P. Evans, and Alfred Bickerton Evans, the latter being in Montreal looking after the Canadian business. Besides their usual trade Messrs. Evans are the sole consignees of Montserrat lime juice, which has developed into quite a business of itself, and for the supply of which the firm holds very large Government contracts. Mr. Theo. H. Wardleworth, one of the local secretaries of the Conference, holds a position of trust in this firm.

THE WALKER ART GALLERY, LIVERPOOL.

The firm of Messrs. R. Sumner and Co., 50A, Lord Street, founded in 1844 by the late Mr. R. Sumner, who carried on the business for thirty years and then passed it to his sons, Edward and Robert Sumner, is now conducted by Mr. Arthur Hugill, second son of Mr. John Hugill, of the firm of Messrs. Meggeson and Co., London, and Mr. Overton. Mr. A. Hugill was apprenticed with Mr. Smeeton, of Leeds, where he obtained a thorough knowledge of the retail trade, and subsequently qualified as a pharmaceutical chemist. He was then taken into partnership by Messrs. E. and R. Sumner, who later on retired, and Mr. Overton, a former apprentice of Messrs. Ferris and Co., Bristol, who had been with Messrs. Baiss Brothers and Co., joined Mr. Hugill. The firm since the retirement of the Sumners has been conducted on very "up-to-date" lines, and

the style of business is very progressive since the introduction of new blood, alterations to the premises and works having enabled the firm to expand the area of their operations and to open up a new and extended series of connections both at home and abroad.

Messrs. John Thompson, Limited, of Hanover Street, have within the last ten years gone largely into the business of wholesale chemists, having before that date been dealers in patent medicines and proprietary articles. Messrs. Raimes had a branch in Hanover Street previous to this change on Messrs. Thompson's part, but closed their Liverpool branch shortly after.

The wholesale houses of Liverpool have always been ready to help forward any society or association whose object has been the good or improvement of the retail trade, and both as regards the Chemists' Association and the Pharmaceutical Students' Society it may be truly said that without the aid they get from the wholesale firms they would be in a parlous state; in fact, many of their most active and efficient members are from the wholesale houses.

UNIVERSITY COLLEGE, LIVERPOOL.

The present condition of pharmacy in the Liverpool district is fairly satisfactory, for in spite of the inroads made by the omnipresent "cutter" and the prevalence of branch shops run by limited companies, those in the business who try to do a legitimate dispensing and pharmaceutical trade, providing they are equipped with the requisite amount of technical knowledge and know how to properly avail themselves of the "personal element" in the conduct of their profession, seem to have little reason for complaint. To them "cutting" has really come as a friend in disguise, as it has to a great extent relieved them of the necessity of looking after a heterogeneous collection of those extraneous aids to profit-making wrongly termed "profitable extras," and caused them to cultivate the more professional and at the same time more profitable business—dispensing.

INDUSTRIES OF THE LIVERPOOL DISTRICT.

Among the chemical industries carried on in the neighbourhood of Liverpool, the manufacture of alkali being of prominent importance and especially interesting to pharmacists, first claims attention. At the time of the former Conference meeting, the Leblanc method was generally followed, its main features being the decomposition of sodium chloride by treatment with sulphuric acid and subsequent conversion of the sodium sulphate, or "salt cake" thus produced, into carbonate by heating it with a mixture of chalk and coal. From the "black ash" thus obtained the carbonated alkali is dissolved out with water from the insoluble calcium sulphide, in which form greater part of the sulphur of the sulphuric acid that has been used in decomposing sodium chloride remains mixed with other impurities, constituting what is known as alkali waste. In addition to the loss of sulphur thus incurred, the accumulation of this waste material becomes a source of great annoyance by gradually evolving sulphuretted hydrogen as a result of chemical alteration. At the time now referred to, after many unsuccessful attempts had been made to utilise this material, an important improvement of the Leblanc process had been just brought into practical operation by Dr. Ludwig Mond at the works of Messrs. John Hutchinson and Co. at Widnes, where visitors of the Conference in 1870 had the opportunity of inspecting the sulphur recovery process there carried out. It consisted essentially in converting the insoluble calcium sulphide, by oxidation, into thiosulphate and other soluble sulphur compounds, from which sulphur could be precipitated by adding hydrochloric acid to the liquor obtained by lixiviating the oxidised alkali waste. A similar process had been suggested so far back as 1836 for the two-fold purpose of preventing the nuisance arising from alkali waste and also reducing the cost of manufacture due to the loss of sulphur, but the management of the complicated reactions on which a successful result depends then proved an obstacle to its adoption. When Dr. Mond came to England in 1862 to introduce his process, which he believed to be new and original, he found to his surprise that the reactions on which it depends had been previously observed and that, to some extent, attempts had been made to apply them by alkali manu-

facturers in several parts of the country. Since the time when the successful working of the Mond process was secured by suitably adjusting the several details of manipulation, the recovery of sulphur from alkali waste has become an important item, and several other processes have been introduced for the same purpose.

Mond's process of sulphur recovery like several others has the disadvantage of necessitating a large consumption of hydrochloric acid, and as that product of the alkali manufacture became more valuable, various attempts were made to overcome this disadvantage. Thus for instance the reaction of magnesium chloride with calcium sulphide, giving rise eventually to calcium chloride and sulphuretted hydrogen, has been so applied, the gas being either completely burnt to sulphurous acid for the supply of vitriol chambers, or utilised for the production of sulphur by the reaction of sulphuretted hydrogen with sulphurous acid. The earlier trials in that direction have been improved upon by Chance with much success by acting upon alkali waste with carbonic acid gas, so as to obtain a gaseous product containing a sufficiently large proportion of sulphuretted hydrogen to admit of being used either as a source of sulphurous acid, or for eliminating sulphur by burning the gas with a limited supply of air in contact with ferric oxides. By this process the calcium sulphide of the waste is converted into carbonate which can again be used for producing black ash or for other purposes.

Another process which was beginning to gain ground in 1870 is the Weldon regeneration of manganese peroxide from the manganese chloride in waste liquors from the production of chlorine. This process was first carried out on a working scale at St. Helens, near Liverpool, and at the time of the 1870 Conference it was rapidly advancing to the important position it eventually occupied. The process introduced by Deacon for the production of chlorine from hydrochloric acid without manganese peroxide and by the action of atmospheric oxygen in the presence of copper oxide at a red heat, was also then attracting attention as a probable competitor with the Weldon process, and since that time both of these processes have been extensively worked.

All the improvements of the alkali manufacture above referred to are intimately connected with the Leblanc method, and are subsidiary to it. But the most striking fact in connection with this industry is the rise and progress of the ammonia process. Though it did not come into practical operation in this country until after 1870, the manufacture of alkali in that way has rapidly developed to a position of equality with production by the Leblanc system, and it has now reached a point at which the quantity of salt decomposed is greater than that decomposed by the Leblanc method, as will be seen from the following tabular statement of the relative quantities of salt decomposed by the two methods in the United Kingdom.

	1885.	1890.	1893.	1894.	1895.
Leblanc	598,096	602,769	467,562	434,298	408,173
Ammonia	115,032	252,260	349,609	361,603	428,614
	713,128	855,029	817,171	795,901	836,787

At an early period in the history of the alkali manufacture the production of sodium bicarbonate by the reaction of ammonium bicarbonate with sodium chloride was made the subject of a patent by Dyar and Hemming, the process having been practically carried out by them and by others, though without being commercially successful until the attendant difficulties were overcome by Solvay in 1872.

From the ammonium chloride, which is the collateral product of the ammonia process, ammonia can be readily recovered for future operation by treatment with lime. The waste liquor from that operation, containing calcium chloride, is free from the objection attaching to the waste from the Leblanc process of being a source of nuisance; but the chlorine of the salt decomposed is in a state of combination from which it cannot be economically liberated or converted into hydrochloric acid. Various processes have been suggested for that purpose, but none of them have been practically successful. The relative future progress of these two methods of alkali manufacture depends therefore very largely upon the successful issue of the attempts to obtain the chlorine of salt in an available form for the production of bleaching powder and chlorates.

Quite recently the production of soda and chlorine from sodium chloride by electrolysis has been brought within the scope of practical manufacturing operations by Hargreaves and Bird at Farnworth,

THE LANDING STAGE, LIVERPOOL.

by Holland and Richardson at St. Helens, as well as by the Kastner-Kellner Company, which is about to erect works for the purpose near Runcorn (see *ante*, page 36).

Closely connected with the alkali trade is the manufacture of glass, an important industry in the Liverpool district. The first plate-glass works in this country were established in 1772 at Ravenhead, near St. Helens by a company incorporated by Act of Parliament. Twenty years ago England produced the largest quantity of plate-glass as compared with France, Belgium, and Germany, but now the largest production is in the United States of America, Belgium, and France. The manufacture of plate-glass in Great Britain is now confined to three works at St. Helens, all the others having been closed in consequence of foreign competition. In 1826, works for the manufacture of crown and sheet glass were established at St. Helens by William and Robert Pilkington, and they have since steadily increased their production as well as the quality of the products. Siemen's tank furnaces were first introduced at these works, and for many years they were the only ones in successful operation. Messrs. Pilkington are now the largest makers of window glass and rolled plate.

As affording striking illustration of the change that has taken place in connection with this industry, it may be mentioned that in 1802 the price of plate-glass was from 15*s.* 3*d.* to 67*s.* 10*d.* per square foot, according to the size of the sheets, and at the present time the corresponding prices are 1*s.* 8*d.* to 1*s.* 10*d.* Within ten years the value of the plate-glass exported has decreased, while the value of the imports has increased, as shown in the following table:—

	1884.	1894.
Exports of Plate-Glass	272,883	72 835.
Imports „ „	167,977	330,045.

The importation of tallow, palm oil, and other fats into Liverpool, together with the local production of alkali, offer facilities for the manufacture of candle materials and soap in the Liverpool district. The works of Price's Candle Company, situated on the west bank of the Mersey, where it is joined by Bromborough Pool, were established in 1853 for treating the palm oil landed at Liverpool, and adjoining them a village of 127 houses has since grown up where ample provision is made for the social well-being of the Company's workpeople in the shape of a church, chaplain, hospital, and medical officer, gasworks, library and reading-rooms, and Mutual Improvement Society. Attached to the houses are gardens, allotments, and recreation grounds, accommodation for keeping pigs and poultry, and a co-operative society—in which each member can hold one seven pound share—serves to supply the village with provisions. At these works the treatment of fats for the preparation of the stearic acid used in candle making is carried out as the principal operation. As a collateral product glycerin is obtained in various degrees of purity, also lubricating and cloth oils, and soap. The number of hands employed is over 500.

At the large works of Messrs. Lever, situated at Port Sunlight, the manufacture of soap is the main object, but within recent years the extraction of glycerin from the soap lye, formerly run to waste, has been carried out there on a very extensive scale to supply the demand that has arisen for the manufacture of nitro-glycerin, dynamite, and other explosives.

In addition to the particulars already given of the chemical manufacturing operations carried on in the Liverpool district, many others might be mentioned which are of modern introduction, if space would allow. Thus, for instance, the old process for making sodium bicarbonate by subjecting crystals of carbonate to the action of carbonic acid, is now pretty well abandoned in favour of the product of the ammonia process, or the soda ash produced by it is ignited, made into monohydrate and then heated with carbonic acid gas. Sodium chlorate is being made of high quality by Messrs. Bowman and Thompson by a patented process based on the action of chlorine upon sodium carbonate. The utility for disinfecting purposes of chlorine compounds capable of readily liberating chlorine has been taken advantage of by the United Alkali Company in the manufacture of an inexpensive sodium hypochlorite solution containing ten per cent. of available chlorine for domestic application in flush tanks. Sodium manganate is also produced by the United Alkali Company for the treatment of town sewage, after the plan adopted on a very large scale by the Metropolitan Board of Works.

How to Get to Liverpool.

No difficulty need be experienced in getting to Liverpool from any part of the United Kingdom, the facilities for proceeding there by rail or sea being exceptional and perhaps unequalled. The Midland and London and North-Western Railway Companies, however, have issued special circulars, calling the attention of Members of the British Pharmaceutical Conference to their fine services of express and fast trains from all the principal towns in England and Scotland to Liverpool and back.

The Midland Railway Company will provide saloon carriages with lavatory accommodation for parties to and from Liverpool by any train, on payment of a minimum amount representing not less than the price of four first-class and four third-class tickets. A third-class saloon carriage may also be obtained on paying for ten or more third-class tickets. Application for such accommodation must be made in advance to the Midland Station Masters or to Mr. W. L. Mugliston, Superintendent of the Line, Derby. In addition, the exclusive use of a first-class compartment can be reserved, provided not less than four first-class tickets be taken, and of a third-class compartment if six third-class tickets be taken.

The London and North-Western Railway Company will provide a family carriage on payment of a minimum charge of four first-class and four third-class fares, or a saloon if first-class tickets be taken equivalent in value to four first-class and four third-class fares, application to be made to Mr. Robert Turnbull, Euston Station, London.

Members of the Conference in the London district, who intend leaving for Liverpool on Monday, July 27, and would like to take advantage of the above arrangements with respect to saloon carriages, are requested to communicate without delay with Mr. W. A. H. Naylor, 38, Southwark Street, S.E.

Once arrived at Liverpool, members will be able to obtain return tickets to any place on the Midland and North-Western systems, not more than fifty miles distant from Liverpool, on production of cards of membership or letters of invitation and payment of single fares. Periodical tickets will also be issued on favourable terms for the convenience of members staying outside Liverpool.

Places of Interest in Liverpool.

University College, Brownlow Hill.

Royal Infirmary and Medical School, Pembroke Place.

Brown's Museum, William Brown Street, Lime Street. Open from 10 a.m. to dusk, except Friday.

Walker Art Gallery, William Brown Street, Lime Street. Permanent Collection of Paintings. Open daily, except Friday.

Picton Reading Room, William Brown Street, Lime Street. Open daily, Fridays until 2 p.m.

St. George's Hall, Lime Street. Visitors admitted on application to the Hall-keeper.

The Exchange Buildings, Exchange Street.

Government Buildings, Victoria Street.

St. Peter's Pro-Cathedral, Church Street.

SEFTON PARK.—By tram from Lime Street.
STANLEY PARK.—By tram from Pier Head.
NEWSHAM PARK.—By tram from Lime Street.
WAVERTREE PARK AND BOTANICAL GARDENS.—By tram from Lime Street, or by train to Edge Hill.

EXCURSIONS FROM LIVERPOOL.

Excursions may be made to Southport by train from Exchange Station, Lancashire and Yorkshire Railway; by train from the Central Station, and on Sundays by steamer from the Prince's Stage.

To Llandudno and Menai Bridge.—Daily excursions by steamer from the Prince's Stage run during the summer at 10.45 a.m., returning by 7.30 p.m.

The Isle of Man may be visited by steamer, leaving the Prince's Stage at 10.30 a.m., arriving at Douglas at 2.15 p.m., and returning to Liverpool at 4 p.m., reaching the Stage at 7.45 p.m.

LIVERPOOL CONFERENCE PROGRAMME, 1896.

PRESIDENT: WM. MARTINDALE (LONDON).

MONDAY, JULY 27.

8.0 p.m.—Reception by the President and Mrs. Martindale, and Conversazione at the Walker Art Gallery.
Demonstration of Radiography.
Music and Light Refreshments.

TUESDAY, JULY 28.

10.0 a.m.—Sessions of Conference in the Arts Theatre of the University College.
Welcome by the Lord Mayor (the Earl of Derby).
Presidential Address.
Reading and Discussion of Papers.
1.15 p.m.—Luncheon at the Adelphi Hotel.
2.0 p.m.—Sessions of Conference resumed.
4.15 p.m.—Cruise on the Mersey and in Liverpool Bay on the s.s. "Magnetic."
Tea on board the vessel.

WEDNESDAY, JULY 29.

10.0 a.m.—Sessions of Conference resumed.
1.15 p.m.—Luncheon at the Adelphi Hotel.
2.0 p.m.—Sessions of Conference finally resumed.
3.30 p.m.—Coaches leave for the Lancashire Watch Factory, Prescot, *via* Croxteth (seat of the Earl of Sefton) and Knowsley (seat of the Earl of Derby).
Tea after Inspection of Factory.
8.30 p.m.—Smoking Concert at the Adelphi Hotel.
Drawing Room Concert at the Adelphi Hotel.

THURSDAY, JULY 30.

9.30 a.m.—Steamer (Seacombe boat), leaves Landing-Stage for Chester.
12.30 p.m.—Luncheon at the Grosvenor Hotel, Chester.
1.30 p.m.—Coaches leave for Eaton Hall (the seat of the Duke of Westminster).
3.30 p.m.—Coaches leave Eaton Hall for Hawarden.
5.0 p.m.—Tea at the Glynn Arms, Hawarden.
7.0 p.m.—Coaches leave for Chester, Northgate Street Station.

TICKETS.—No. 1 book of tickets price 10*s.* 6*d.* will admit to the reception, luncheons, river cruise, excursion to watch factory, and smoking concert. No. 2 book of tickets, also 10*s.* 6*d.*, will include railway and coach fares, luncheon and tea on Thursday. Application for these tickets should be made to Mr. Theo. H. Wardleworth, Hon. Secretary, 56, Hanover Street, Liverpool, on or before July 20, 1896.

LADIES' COMMITTEE.—A committee of ladies has been formed for the purpose of rendering the visit of the lady friends as enjoyable as possible. This committee has arranged for a ladies' drawing room at the University College, where afternoon tea will be provided each afternoon, and a lady will be in constant attendance.

THE GENERAL FEATURES OF PHARMACOPŒIAS.*

BY OSCAR OLDBERG.

A brief statement of the principal features and general directions of the national pharmacopœias must prove interesting and instructive to all pharmacists who have not the opportunity or the time to examine into these questions for themselves. The notes here given are based upon the American, British, German, French, Dutch, Swiss, Danish, and Norwegian Pharmacopœias, because these are important, recent, and specially interesting.

Language of the Text.—This is at present generally the language of the country. Thus, the American and British Pharmacopœias are in English, the French is in the French language, those of Denmark and Norway in Danish and Norwegian, respectively, and the Swiss in several different editions, one in each language spoken by the people of different portions of that country, namely, in German, French, Italian, and Latin. The Pharmacopœias of Germany and Holland are published in Latin as well as in the native languages of the respective countries.

In some pharmacopœias, as those of Russia, Norway, etc., the running text is in the national language but the titles in Latin, both in the headings and in the working formulæ.

Scope.—There are great differences between the several pharmacopœias as to the number of substances contained in them, and as to the definitions, descriptions, working formulæ, tests, general directions and precepts, tables, and other information presented. With regard to the number of drugs, chemicals, and preparations, it may be observed that no definite principle is followed in any pharmacopœia, and yet it is apparent that new remedies are but slowly introduced and that old remedies are tenaciously retained.

The British Pharmacopœia stated in its preface in 1867 that it had for its object "not so much the selection as the definition of the substances which the physician prescribes." That is a good rule, but it requires to be supplemented by other rational principles based upon the intimate relation of chemistry to pharmaco-dynamics.

Some pharmacopœias contain three times as many different medicinal substances as some other pharmacopœias. About one thousand are contained in the United States Pharmacopœia, a much larger number in the French, and a much smaller number in the German.

Several pharmacopœias, including those of Holland and the Scandinavian countries, classify the official medicinal substances into obligatory and optional; the obligatory articles must at all times be found in any drug store, while the optional articles may be lacking in the outfit of the store without rendering the apothecary liable to complaint for violation of the law. But the classification referred to appears to be based solely upon the relative frequency with which the article is prescribed, and not upon its importance as a remedy when really required. Thus we find among the obligatory remedies such things as cinnamon water, borax, ammoniac, asafœtida, etc., and among the optional remedies such as acetanilide, antipyrine, ammonium carbonate, pepsin, etc.

Working formulæ for chemical preparations are becoming more and more rare. The Swiss Pharmacopœia mentions that such formulæ are given only in two kinds of cases: (1) whenever the strength of the preparation depends upon and is fixed by the process by which it is made, and (2) whenever the working processes are such as may be instructive and suitable for practice in the laboratory.

The French Pharmacopœia is divided into several parts; the first part treats of the crude drugs, the second of chemicals, the third of pharmaceutical preparations, the fourth of veterinary medicines, and the fifth of the laws and regulations governing the practice of

* Reprinted from the *Bulletin of Pharmacy*.

pharmacy. The classifications are, however, in some cases, rather inconsistent ; thus animal gelatin, charcoal, dextrin, coal-tar, amber, pepsin, petrolatum, ammoniated glycyrrhizin, etc., are classed among the chemicals, while fixed and volatile oils, and the solutions of calcium hydroxide, sodium arsenate, chromic acid, etc., are classed as galenical preparations.

Drugs.—Many of the pharmacopœias still retain a large number of obsolete and useless plant drugs, and many of these crude drugs are included without any formulæ for suitable preparations of them. In the U.S. Pharmacopœia we have absinthium, anisum, cascarilla, caulophyllum, chelidonium, granatum, hedeoma, illicium, inula, phytolacca fruit, pulsatilla, staphisagria, and several other crude plant drugs not represented by, or entering into, any official preparations, and apparently useless in their unprepared condition.

Several pharmacopœias declare that all the official plant drugs must be understood to be dried, unless otherwise specified.

Directions as to the time and mode of collecting and curing plant drugs are given in the French, Scandinavian, and several other Pharmacopœias, but not in those of Germany, Switzerland, Holland, Great Britain, and the United States.

Occasionally such materials as sublimed sulphur, sugar, wine, wax, etc., although employed in making official preparations, are not mentioned under separate heads, and hence not provided with official latinic titles, nor with any definitions or descriptions. The Pharmacopœia of the Netherlands gives a table of articles mentioned in the official formulæ but not provided with separate titles, descriptions, tests, etc., and includes among these articles such important substances as potassium hydroxide, sodium hydroxide, petroleum ether, lard, etc. In the Danish and Norwegian Pharmacopœias we find the title "Glacies, Is" (Ice), without any descriptions or tests—probably the only instance of its kind ; it might as well not have been mentioned at all.

Water is so important that most of the pharmacopœias contain specific directions as to the kind of water which should be used. A majority of them prescribe distilled water for all, or nearly all, purposes.

Chemicals.—Chemical compounds of definite composition, as well as chemical preparations consisting of more than one kind of molecules, are to be found in large number in all pharmacopœias. In most pharmacopœias the molecular formulæ are given wherever practicable ; in others the symbolic formulæ are wholly omitted, as in the German Pharmacopœia.

The British Pharmacopœia generally refers very briefly to the common methods of production of chemicals, including these references in the descriptions.

Identity tests for chemicals are to be found in many of the recent pharmacopœias, and purity tests in all ; but the tests are far more elaborate and complete in some than in others.

Pharmaceutical Preparations.—Galenical preparations are in some pharmacopœias not only excessively numerous, but very complex. The French, Swiss, and Spanish Pharmacopœias contain some curiosities, such as should no longer be seen in respectable national codes. In regard to the absurd composition and crude methods of preparation of the galenicals, the French and Spanish Pharmacopœias are the worst in the world.

Definitions.—Definitions of individual drugs are sometimes altogether absent and in other cases so loosely drawn as to be quite useless. This may be seen in the French and Spanish Pharmacopœias. In no pharmacopœia are the definitions, descriptions, and tests more complete than in the Pharmacopœia of the United States.

(*To be continued.*)

PARLIAMENTARY NOTES AND NEWS.

M.P.'S AND THEIR CONSTITUENTS.—The following letter is instructive as showing the earnest desire of the average M.P. to please all his constituents, and the consequent "mess" he is led into. The letter is a strict copy of a reply sent by an Honourable Member to an elector who desired him to support a rather useful public measure then before the Commons :—

"Dear sir,—I am in receipt of your letter of yesterday's date on the subject of the ——— Bill. I am rather of opinion that I have promised someone to vote against the Bill but can't quite recollect definitely. I am, however, endeavouring to find out."

COCOA BUTTER.—West Islington should be proud of its parliamentary representative. He is an ardent follower of Cobden and exhibited much virtuous hostility to the Chancellor of the Exchequer's motion to provide a 1*d.* customs duty on "cocoa butter" in the Finance Bill. Mr. Lough objected on principle to the impost because it savoured of Protection. "Few persons," said the Honourable Member warming to his subject, "seem to know what cocoa butter is—where the cocoa ended and the butter began." This was distinctly good, nor were the subsequent explanations less excellent. The substance was not a drink, he said, and could not be used as a drink. It was a by-product obtained from cocoa and was used in the manufacture of confectionery, where it largely took the place of sugar. Moreover, it was employed for the hair and the manufacture of medicines. It would be interesting to know what sort of effect this explanation would have upon the average "man in the street."

THE COMPANIES BILL.—The usual weekly meeting of the House of Lords Committee took place on the 10th instant, when the Registrar of Joint Stock Companies attended and gave evidence. The witness tendered some interesting statistics conveying unmistakable indications of the direction of commercial activity. During the first decade after the passing of the Companies Act, 1862, the average rate of registration was 670 companies a year. In the second decade the average rose to 1085, and for the last three years it reached 2845 per annum. During the last six months a much greater increase has been noted, and the annual average calculated therefrom is no less than 4298. It was stated that 50 per cent. of the companies registered are abortive. Figures are said to be capable of proving anything. The alternatives here are much opposed, for it may be inferred that incorporation is either an immense boon to the bonâ-fide commercial community, or affords an easy and efficient means of escaping one's creditors. At the present moment there are, according to Mr. Purcell, upwards of 20,000 companies making annual returns, and they represent a capital (which may or may not be real) of over one thousand million pounds. With regard to private companies, Mr. Purcell thought there would be great difficulty in defining the term "private company," and he further considered that there would be an element of unfairness in granting special privileges to such companies. A good many persons, however, will agree with Mr. Purcell's dictum that the best way of checking bogus or unreal companies is to put the drag on at the initiation of the concern. On the ground that the Bill would go a long way in that direction, Mr. Purcell was disposed to support it. Mr. John Smith, C.B., Inspector General in Bankruptcy, also gave evidence.

SCIENCE AND ART VOTES. — On the vote of £514,795 for the Science and Art Department, Mr. Caldwell (Mid-Lancashire) moved a reduction of £100. The particular grievance seemed to be that the Government were not spending enough on works of art for museums and circulation, and it apparently occurred to Mr. Caldwell that the best way of remedying the evil was by further reducing the power of spending. For a similar reason he also moved a reduction of £100 in respect of the item for the Edinburgh Museum of Science and Art. In both instances the attempted reduction was unsuccessful, but it involved two divisions and an expenditure of some forty minutes of time.

THE NEW COMMISSION ON TUBERCULOSIS is constituted as follows :—Sir Herbert Maxwell (chairman), Professor Browne, Dr. Thorne Thorne, Dr. Shirley Murphy, Mr. H. E. Clare, Mr. T. C. Trench, and Mr. John Speir.

PHARMACEUTICAL JOURNAL.

A Weekly Record of Pharmacy and Allied Sciences.

ESTABLISHED 1841.

Circulating in the United Kingdom, France, Germany Austria, Italy, Russia, Switzerland, Canada, the United States, South America, India, Australasia, South Africa, etc.

Editorial Office: 17, BLOOMSBURY SQUARE, W.C.
Publishing and Advertising Office: 5, SERLE STREET, W.C.

LONDON: SATURDAY, JULY 18, 1896.

THE SOCIETY OF CHEMICAL INDUSTRY.

By a wise arrangement the annual meeting of this Society is mainly an opportunity for the members to take a brief holiday and for friends and acquaintances located at various parts of the country to meet together and discuss matters of interest in connection with the particular branches of industry in which they are engaged. There is no formal reading of papers, a proceeding which is often tedious to many, and likely to be made use of for purposes of display having little harmony with the real objects of the Association. Such work is at the present time more suitably carried out as a pure matter of business by the numerous local associations existing in all parts of the country. The more useful purpose served by the annual meeting of the Society of Chemical Industry is to extend the personal acquaintance of all who are engaged in the conduct of manufactures involving application of chemistry and other branches of science. By that means much may be done to promote the progress of improvement and invention, for nothing is more productive of stimulus in that direction than the occasional interchange of experiences between persons following the same or even different pursuits.

A certain amount of business has necessarily to be transacted at these annual meetings, such as the presentation of the report of the Council and of the Treasurer's financial statement, the election of President and officers and the delivery of an address to the members. This year the account given of the Society's operations during the past twelve months shows that its position is fairly prosperous. The number of members on the Register shows an increase of 62 over that of last year as the difference between the addition of 223 new members and the loss of 161. Though not stated in the report, it may be assumed that the latter number represents some secessions, but in any case there seems to be reason for the opinion that the support accorded to this eminently useful Society still falls short of what might be expected in a country where manufacturing industry holds a position of such vast national importance.

As a result of the Society's organisation in sections at at different centres, there has been during the past year considerable activity shown by the reading of papers, most of which have been published in the Society's Journal, and thus rendered accessible to members at a distance.

The Treasurer's statement shows that the Society's finances are in a flourishing condition, the balance of income over expenditure being £162, irrespective of entrance fees and life composition fees, although there has been an expenditure of £361 on the collective index now being prepared. Taking into account the large outlay on the production of the Society's Journal (£2801 14*s.* 6*d.*)—one of the most useful parts of its work—the result is satisfactory evidence that attention has been given to the recommendation of the late President in his address at the Leeds meeting.

The President of the Society, Mr. TYRER, has during his year of office established the excellent precedent of visiting all the sections of the Society, and as one of them is situated in New York, this sign of activity in discharge of the responsibilities of official position cannot fail to be highly appreciated by the members generally. At five of the sections, London, Liverpool, Newcastle, Yorkshire, and New York, new chairmen have been elected in place of those retiring from office at the end of the past session.

During the year an inquiry has been carried out as to the practicability of extending the reports of specifications of patents in the Society's Journal, so as to include foreign and colonial patents relating to chemical industries. After much consideration and the preparation of draft abstracts of French, German, and American patents, the inherent difficulties of the work and its great cost were found to be an insuperable obstacle to the project.

Among other work of the Council, it has given support to the proposal to erect a memorial to PASTEUR in recognition of the many benefits he has conferred upon industrial chemistry. Another act of a similar nature was the decision to award a medal at intervals of not less than two years for conspicuous services rendered to applied chemistry, either by research, discovery, invention, or improvement of processes. The first award has been made to Mr. JOHN GLOVER, the inventor of the arrangement known as the "Glover tower," from the use of which chemical industry has derived enormous benefit. The presentation of the medal to Mr. GLOVER formed an interesting feature of the meeting on Wednesday.

In the Presidential address delivered by Mr. TYRER, the report of the Council and other records of the past work of the Society were briefly referred to as having sufficiently dealt with that subject, and the possibility of a more extended field of future usefulness formed the leading idea to which attention was directed.

In that respect Mr. TYRER urged the desirability of co-operation with chambers of commerce for the purpose of influencing legislation, promoting rational regulation of manufacturing operations and establishing a more thorough system of educational training. In his remarks he pointed out how much had been done in these directions by the German Society for protecting the interests of chemical industry; he also showed that the recent rapid advance made by Germany in all branches of industrial enterprise is chiefly due to the generally superior qualifications of those engaged in directing such operations. The large number of official and other published documents referred to in the course of the address show that Mr. TYRER has taken great pains to collect information on these subjects, and to provide, in his address, abundant material for thoughtful consideration by everyone interested in the chemical industries of the country.

TECHNICAL EDUCATION IN LONDON.

As bearing upon one of the subjects discussed by Mr. TYRER in his presidential address to the Society of Chemical Industry on Wednesday, some facts gleaned from a recently published short history of the City and Guilds of London Institute for the Advancement of Technical Education should prove interesting. The movement, of which the Institute is one of the chief results, may be said to be just twenty years old, for the first definite step taken in the matter was the adoption of the following resolution at a meeting of representatives of Livery Companies, held at the Mansion House on July 3, 1876 :—

> That it is desirable that the attention of the Livery Companies be directed to the promotion of Education, not only in the Metropolis but throughout the country, and especially to technical education, with the view of educating young artisans and others in the scientific and artistic branches of their trades.

In the early part of the following year, a conference took place between committees of the Mercers', Drapers', and Clothworkers' Companies, and a provisional committee was constituted from representatives of the Corporation and Guilds of London, with LORD SELBORNE as chairman, to consider the best mode of applying the funds which those bodies were willing to contribute towards the improvement of the technical knowledge of those engaged in British manufactures. Reports were received by this committee from PROFESSOR HUXLEY, SIR WILLIAM ARMSTRONG, and other competent authorities, with the result that it was recommended, first, to establish a central institution or college for the advanced education of those who had already acquired a sufficient knowledge of science or the arts to enable them to profit by instruction in their industrial applications; secondly, to conduct examinations in technological subjects; and thirdly, to encourage the establishment of local schools for artisans.

These proposals meeting with the approval of the Corporation and the Livery Companies, the City and Guilds of London Institute was founded in 1878 and incorporated two years later. In 1881 the foundation stone of the Central Technical College, Exhibition Road, was laid by the Prince of Wales, who also opened the College in 1884. Courses of instruction, covering a period of three years, are provided at this institution, in civil, mechanical, and electrical engineering, and in chemistry. Evening classes for artisans and apprentices were also commenced in rooms in Cowper Street, and those classes have since developed into the Technical College, Finsbury, whilst an Art School for the training of those engaged in art industries in the South of London was established in Kennington Park Road, and the Technological Examinations conducted by the Society of Arts were taken over and considerably expanded. During the Session 1894-5, the number of students taught was as shown in the following table :—

Institution.	Day students.	Evening students.	Total.
Central Technical College	208	526	734
Technical College, Finsbury ..	210	926	1136
Total number of day and evening students			1870

The fees and other charges received from students now amount to about £8000 annually at the two institutions, exclusive of about £850 remitted in the form of scholarships, or upon special application by candidates whose parents are not in a position to pay the full fees.

ANNOTATIONS.

THE IMPERIAL INSTITUTE.—The Scientific and Practical Research Department of the Institute has recently received important additions to its resources from two of the most prominent City Companies. The Goldsmiths' Company has contributed a second donation of one thousand pounds to the special funds of that Department, to be applied to the extension of its laboratories and to their better equipment. The Salters' Company has established a Research Fellowship of the value of one hundred and fifty pounds per annum, in connection with the Scientific Department, tenable by chemists thoroughly qualified to investigate natural products received by the Imperial Institute from the Colonies and India.

HERMITINE AS AN ANTISEPTIC.—The electrolysed sea water employed in Hermite's sanitary process is now being recommended in Paris as an antiseptic and disinfectant, under the name of "Hermitine." Dr. Carlier, of Rouen, and Dr. Chantemesse, of Paris, have experimented with the preparation and expressed very favourable opinions concerning it, whilst in a communication to the Académie de Médecine, Dr. Proger also speaks very highly of it. He says it is neither caustic nor irritating, it may be applied to the mucous membrane as freely as to the skin, it instantly removes all bad odours, and stops all putrescent fermentation. Compared with other preparations hermitine is said to kill microbes more effectually and rapidly, whilst it cleanses fetid wounds and sores, hastens healing, and is an ideal antiseptic.

AMATEUR PHARMACISTS.—The *Medical Press* is concerned that the successful encroachment of the Co-operative Stores, which now drive a thriving trade at the expense of the legitimate chemist, has encouraged other shopkeepers to establish pharmaceutical departments, worked by qualified men at the narrowest margin of profit. Our contemporary is also alarmed at the inroads being made in Ireland into the prerogative of chemists in connection with union drug contracts, by whiskey dealers, and others. The Pharmaceutical Societies of Great Britain and Ireland are therefore urged to defend their privileges, and it is suggested that chemists will do better if they expend their energies upon protecting their legitimate function from the inroads of quacks than in striving to compensate themselves by counter-prescribing profits. The *Medical Press* is ever harping on this string and setting up dead men to be killed, but why should it worry itself about the troubles of pharmacists if it be to the advantage of the medical profession that "the compounding of prescriptions and the supply of drugs should be open to all comers"? This statement is not in accord with a preceding one by the same writer that the increasing encroachment upon the pharmacist's province "is becoming a very serious matter, not only for chemists, but for the public."

DEATH OF PROFESSOR KEKULE.—The Berlin correspondent of the *Times* reports the death of Friederich Auguste Kekule at Bonn, on the 13th inst., at the age of sixty-seven. While Professor of Chemistry at the University of Ghent, Kekule's work and researches exercised great influence on the progress of science, especially the doctrine he propounded as to the constitution of aromatic compounds, which may be said to have created a new era in organic chemistry.

EUCAINE IN OPHTHALMIC PRACTICE.—Mr. Brudenell Carter reports to the *Lancet* the result of some trials of this substitute for cocaine in operations for cataract extraction, etc. After the application of a 5 per cent. solution the eye became perfectly insensitive, the pupil was unaffected, there was no pain, and scarcely any bleeding.

"ARSENIC IN CIGARETTES" is worrying Dr. William Murrell, but so far as his somewhat unnecessary examination has proceeded it would appear that the title of his report in last week's *British Medical Journal* should rather have been "Arsenic out of Cigarettes." With the assistance of Dr. Wilson Hake, Dr. Murrell has conducted a large number of experiments, and the net result of the investigation seems to be that Reinsch's and Marsh's tests for arsenic are very delicate, that arsenic is sometimes present in green paper, and that such paper may serve as wrappers for tobacco and cigarettes. There is nothing particularly novel in the first and second discoveries, and less that is interesting or exciting in the third, for smokers are not often so hard pressed that they must smoke or chew tobacco or cigarette wrappers. Perhaps, however, the medical student whose sad case is quoted has been in the habit of doing so. In that case it might be useful to exhibit him in the act of doing it at the approaching exhibition at Carlisle, with Drs. Murrell and Hake in the background demonstrating the delicacy of Reinsch's and Marsh's tests. The stall at which the exhibit appears might, with especial appropriateness, be decked with green paper in all possible shades and bear as motto the time-worn aphorism, "A little knowledge is a dangerous thing."

A PHARMACIST'S MAP OF JERSEY.—It might be thought that the Channel Islands would be as well supplied with authentic maps as any other portions of the Queen's European dominions, but it appears that there is not a satisfactory map of the island of Jersey published. The one in most general use seems to have been drawn from memory, and that an imperfect memory, whilst the one reliable map available to the public is a manuscript one in the Jersey Public Library, and that is far from complete. Mr. F. Perrédès, a registered student of the Pharmaceutical Society, having experienced the inconvenience of this state of affairs, whilst botanising in the island, has taken the trouble to copy the Public Library map in sections, and has completed and corrected these whilst going over the ground. The new map, a photographic reproduction of which shows it to be finished with remarkable skill, represents numerous roads not generally recorded, as for example, the road bordering Ste. Catherine, the one connecting St. Martin's Arsenal with Diélament, Pièce de Manger; the new road connecting Longueville, Grouville Arsenal and Grouville Church; the St. Ouen's Manor new main road, etc. Mr. Perrédès—who will be remembered as having collected an excellent herbarium three years ago, for which unfortunately no prize could be awarded in consequence of the Channel Islands not being at that time an eligible hunting ground—has received much valuable help in revising his map from a local solicitor and antiquary, Mr. G. Piquet, a son of the pharmacist of that name.

ALLEGED UNPROFESSIONAL CONDUCT OF CAPE MEDICAL MEN.—There is a lively discussion in the South African press with regard to the unprofessional negligence of certain medical men at the Cape. It has been stated through the local papers that when summoned during the night to urgent cases of illness, one doctor went so far as to lean out of the window and say, "The bed's too comfortable; I can't come." The Medical Board is said to have been asked to investigate the matter.

A SUBSTITUTE FOR COD-LIVER OIL.—A medical correspondent of the *Lancet* recommends the use of cod-gall for this purpose. He makes a wine by digesting an ounce of the fresh gall with 2½ drachms of extract of pancreas in a pint of sherry or port wine for ten days, and then filtering through cotton-wool. The wine is to be administered in doses of one to four teaspoonfuls at or after meals four times a day.

PHILADELPHIA COLLEGE OF PHARMACY AND ITS TITLES.—Since the foundation of this College, in 1821, 14,440 students have received instruction there, and the college diploma of Graduate in Pharmacy (Ph.G.) has been granted to 4343 persons, representing every State in the Union, as well as Canada, Cuba, Central and South America, and various parts of Europe, Asia, and Africa. The full course of instruction at the College now covers three years, and upon all who complete this three years' course, pass successfully all the examinations, and are qualified as to experience in business, the title of Doctor in Pharmacy (P.D.) will be conferred in future. The full requirements for the title are that the candidate must be of good moral character, successfully complete a three years' course of study in the College, serve an apprenticeship of four years with a legally qualified pharmacist actually engaged in business, and produce an original dissertation or thesis on some subject connected with pharmacy, chemistry, or materia medica. Those who are already Graduates can acquire the higher title by passing the third year examination and paying the usual fee. To meet the requirements of those who do not wish to become dispensing pharmacists, but who desire a thorough education in pharmacy and allied subjects, either as preparatory to the study of medicine or manufacturing, the College is prepared to confer the title of Pharmaceutical Chemist (P.C), and possessors of that title may become Doctors in Pharmacy on subsequently submitting satisfactory evidence of three years' actual experience in a retail pharmacy. A graduate of the College, after being engaged in the practice of pharmacy for five years subsequent to graduation may also receive the title of Master in Pharmacy, if of good moral character and professional repute, and after presenting an original dissertation.

DUTCH PHARMACEUTICAL SOCIETY.—The forty-fifth general meeting of this Society, which numbers at present twelve honorary members and 453 members, was held at Alkmaar on July 1 and 2 last. The Central Board and the deputies were received by the Commission of Festivities and welcomed by Chairman van Heynsbergen, on June 30, and the general meeting was opened on July 1 by an address from the Chairman, Dr. Ankersmit, in which he reviewed the work of the bygone year. Messrs. van Ledden, Hulsebosch, and Verwey were elected members of the Central Board. The widow and orphans' fund was then shown to be increasing in prosperity. Several proposals of the Central Board and departments were next discussed at length, and a Committee was appointed which will undertake to draft a list of popular and official names of medicaments. The opinion of the Government will be asked concerning the meaning of "dosis maxima de die," the question being how many hours ought to be counted in a day. Next the question of proprietary medicines, which are as much as possible excluded from Dutch dispensaries, was raised again; the assembly, however, did not approve of the proposal of permitting the imitated proprietary medicines to be advertised. After appointing Middelburgh as the meeting place for 1897, the assembly was closed.

THE COST OF MEDICAL EDUCATION IN BERLIN.—According to the Italian Secretary for Commerce and Agriculture, the cost incurred by a student at Berlin who obtains the diploma of doctor of medicine and physician is about 2300 marks. The fee for matriculation is 18 marks; for examination for the medical faculty, 242 marks; diploma fee, 440 marks; fees for all necessary lectures, etc., 800 to 1200 marks; cost of printing the dissertation, about 150 marks; and the necessary books and instruments, 500 marks. Then for board, lodging, and clothes 7600 to 8000 marks must be added for the four and a half years of study.

PHARMACEUTICAL SOCIETY

EXAMINATIONS IN LONDON.

July, 1896.

MINOR EXAMINATION—PASS LIST.

Candidates examined..... 208
„ failed..... 72
„ passed 136

Blakeley, William.
Brown, Charles.
Chambers, Frank Dawson.
Clarke, William John.
Cleave, Thomas William.
Collin, John Francis.
Courtenay, Edward.
Critchley, Charles Albert.
Daniels, Herbert Joseph.
Desmond, Dennis Wm. Andrew.
Dewhirst, John Arthur.
Dickenson, Joseph Fredk.
Edwards, Lewis.
Evans, Octavius William.
Evans, Ralph James.
Falkner, Sandbrook.
Firth, Fred.
Fisher, George Howard.
Frith, John Benjamin.
Fulleylove, George Ernest.
Gedge, Horatio Wm. Turner.
Greaves, Alfred Ellis.
Green, Hugh.
Greenville, Ernest Gould.
Griffiths, Alfred.
Hadley, Mary Winifred.
Harrison, Thomas Arthur.
Hooper, Francis William.
Hooper, Richard John.
Hornby, Frederick William.
Hughes, Robert Vaughan.
Hunt, Harold Edward.
Hutchings, Thomas.
Ireson, Ernest Edward.
Johnson, Walter Thomas.
Kelf, Henry David.
Knight, Richard.
Lisle, Francis Rouget de.
Long, Herbert Samuel Amis.
Long, James Christmas.
Mason, William Edward.
Newton, Thomas Frederick.
Ordish, Francis Prior.
Packer, Frederick Ernest.
Peek, Harold Robinson.
Picken, Charles Reynolds.
Pitcher, James Frederick.
Plumstead, Frederic Geo. Edward.
Rainey, Robert Martin.
Raybould, George.
Roberts, John Theodore.
Robinson, Richard Charles.
Rosser, William Marmaduke.
Ruff, William.
Salthouse, Edward.
Sargeant, Fredk. Pilkington.
Seaton, Richard.
Shaw, Henry Woolhouse.
Silver, Sydney Ward.
Smith, John.
Sparrow, Tom Rosson.
Stamp, George Harry.
Temple, Frederick William.
Thomas, James Douglas.
Turner, Alfred William.
Underwood, Albert Henry.
Walters, John.
Wardale, Francis Charles.
Webb, Ernest George.
White, Frederick Ernest.
Wickens, Thomas Isaac James.
Willmott, Frank.

FIRST EXAMINATION.

Certificates by approved examining bodies were received from the undermentioned in lieu of the Society's examination.

Beesley, William, Lancaster.
Cooper, Ernest, Leicester.
Deed, Arthur Edgar, Lincoln.
Gibson, Francis A., Seaham Harbour.
Griffiths, John Edward, Dowlais.
Hesketh, Thomas Arthur, Wigan.
Jones, John Roger, Conway.
Llewellin, John H., Haverfordwest.
McManus, George, Whitehaven.
Manson, Stanley James D., Scarisbrick.
Middleton, Harold P., Nottingham.
Owen, William, Bangor.
Pitchford, William Thomas, Bristol.
Price, Arthur Stainton, Rowley Regis.
Roadknight, Fredk. A., Atherstone.
Rosenloecher, Arthur R., Dalston.
Saunders, Charles B., Wethersfield.
Sutherland, James J., Edinburgh.
Terrington, John H., King's Lynn.
Vickery, William Robert, Plymouth.
Wheeler, Alice Maude, Oxford.
Wild, Thomas Jabez, Maidstone.
Williams, Archibald E., Rhymney.

"FIRST" EXAMINATION QUESTIONS.

July 14, 1896.

ARITHMETIC.

(*Time allowed—from* 12.30 *p.m. to* 2 *p.m.*)

[The working of these questions, as well as the answers, must be written out in full.]

1. Find the least number which, added to one hundred and fifty-two million one hundred and eighty-one thousand two hundred and fifty-five, will make it exactly divisible by 3854.

2. Find the value of

(4 13/14+5 5/21) of (6 3/4—3 6/7) of 3 tons 15 cwt. 3 qr.

3. Multiply 2·1825 by ·0346, and divide the result by ·0002425.

4. If 4⅜ fields of 18¾ acres each can be mowed by 7 machines in 2 days, how many fields of 28⅛ acres each can be mowed by 6 such machines in 3 days?

5. In what time will £1158 17*s.* 6*d.* amount to £1196 19*s.* 6*d.* at 2½ per cent. per annum.

6. A landlord has an estate that brings him in £4000 a year, but this is liable to deductions for rates and repairs to the extent of 15 per cent. He sells the estate at 24 years' purchase on the gross income, and invests this money in a 3 per cent. stock at 97½. What is the difference in his income? (*Answer to nearest shilling.*)

The following question must be attempted by every candidate :—

7. If a cubic metre contains 1000 litres, find (*approximately*) the number of cubic inches in 3 litres.

LATIN.

(*Time allowed—from* 11 *a.m. to* 12.30 *p.m.*)

I. For all Candidates. Translate into Latin :—

1. I love his brother more than him.
2. He will do it if he is able.
3. The gifts of the enemy will not be preserved.
4. I asked him to come to Athens.
5. A council having been held, they resolved to send ambassadors to the enemy.

II. Translate into English *either* A (Caesar) *or* B (Virgil).

(Candidates must not attempt both authors.)

A.—CAESAR.

1. Ad haec Ariovistus respondit: Jus esse belli, ut, qui vicissent, iis, quos vicissent, quemadmodum vellent, imperarent: item Populum Romanum victis non ad alterius praescriptum, sed ad suum arbitrium, imperare consuesse. Si ipse Populo Romano non praescriberet, quemadmodum suo jure uteretur; non oportere sese a Populo Romano in suo jure impediri. Aeduos sibi, quoniam belli fortunam tentassent et armis congressi ac superati essent, stipendiarios esse factos.

2. Hi neque vultum fingere, neque interdum lacrimas tenere poterant: abditi in tabernaculis, aut suum fatum querebantur, aut cum familiaribus suis commune periculum miserabantur. Vulgo totis castris testamenta obsignabantur. Horum vocibus ac timore paulatim etiam ii, qui magnum in castris usum habebant, milites centurionesque, quique equitatui praeerant, perturbabantur.

Grammatical Questions.

(For those only who take Caesar.)

1. Decline in the singular *suis familiaribus;* and in the plural *commun periculum.* (Passage 2.)

2. Give the principal parts of all the verbs in Passage 1.

3. Parse fully the following words:—*interdum, abditi, querebantur, fatum castris, equitatui.* (Passage 2.)

4. Write in Latin 17, 29, 1896, 13*th*, 76*th*, 102*nd*, *fourteen times, one thousand cavalry, ten thousand infantry.*

B.—VIRGIL.

1. "His ego nec metas rerum nec tempora pono;
Imperium sine fine dedi. Quin, aspera Juno,
Quae mare nunc terrasque metu coelumque fatigat,
Consilia in melius referet, mecumque fovebit
Romanos rerum dominos gentemque togatam.
Sic placitum. Veniet lustris labentibus aetas,
Quum domus Assaraci Phthiam clarasque Mycenas
Servitio premet, ac victis dominabitur Argis."

2. "Jupiter,—hospitibus nam te dare jura loquuntur—
Hunc laetum Tyriisque diem Trojaque profectis
Esse velis, nostroque hujus meminisse minores.
Adsit laetitiae Bacchus dator, et bona Juno!
Et vos, o coetum, Tyrii, celebrate faventes!"
Dixit, et in mensam laticum libavit honore;
Primaque libato summo tenus attigit ore.

Grammatical Questions.

(For those only who take Virgil.)

1. Decline in the singular *gentem togatam;* and in the plural *lustris labentibus.* (Passage 1.)

2. Give the principal parts of all the verbs in Passage 1.

3. Parse fully the following words:—*Jupiter, profectis, hujus, celebrate, faventes, tenus.* (Passage 2.)

4. Write in Latin 17, 29, 1 96, 13*th*, 76*th*, 102*nd*, *fourteen times, one thousand cavalry, ten thousand infantry.*

ENGLISH.

(*Time allowed—from* 3 *p.m. to* 4.30 *p.m.*)

Analyse :—

"There at the foot of yonder nodding beech,
That wreathes its old fantastic roots so high,
His listless length at noontide would he stretch,
And pore upon the brook that babbles by."

Parse fully :—"Don Roderick turned him as the shout grew loud."

3. Correct the following sentences, giving your reasons :—

(i.) Me and my friend went for a walk together.

ii.) He entered into the room to quickly.

iii.) You can only have this when I am done with it.

4. In the following passage supply the necessary capital letters, and put in the stops and inverted commas where necessary :—i have come from my lakes he said as a stream descends from the hills not to turn again but to accomplish my course my voice shall be for that general who will possess qualities which are necessary to command men like us are you prepared thane of menteith to y where such a general is to be found there is but one said allan and here he said laying his hand upon the shoulder of anderson who stood behind lord menteith here he stands.

The following question must be attempted by every candidate :—

5. Write a short composition on *one* of the following subjects :—

(i.) The Navy of Great Britain.

(ii.) Technical Education.

(iii.) Common Sense.

(iv.) Vivisection.

JACOB BELL SCHOLARSHIPS EXAMINATION.

FIRST PAPER.

Time allowed, three hours (11 *to* 2).

LATIN.

1. Translate into English :—

Tum litore curvo
Exstruimusque toros dapibusque epulamur opimis.
At subitae horrifico lapsu de montibus adsunt
Harpyiae et magnis quatiunt clangoribus alas,
Diripiuntque dapes contactuque omnia foedant
Immundo ; tum vox taetrum dira inter odorem.
Rursum in secessu longo sub rupe cavata
Arboribus clausi circum atque horrentibus umbris
Instruimus mensas arisque reponimus ignem :
Rursum ex diverso caeli caecisque latebris
Turba sonans praedam pedibus circumvolat uncis,
Polluit ore dapes. Sociis tunc arma capessant,
Edico, et dira bellum cum gente gerendum.

2. Translate into English :—

(*a*) Post filtrationem in balneo vaporis inter continuam agitationem ad spissitudinem syrupi evaporet extractum. Leni calore exsiccetur et in pulverem redigatur. Servetur caute in vasis bene clausis.

(*b*) Spiritus sit limpidus, coloris fere expers, ab acido plane liber, quamquam tempore facile acescit.

3. Parse fully—*opimis, dapes, cavata, sonans, capessant, gerendum.* (Question 1.)

4. Translate into Latin :—

(*a*) Three hundred of us have undertaken to put the enemy to flight and drive them across the river.

(*b*) "If," said the wise shepherd, "you had observed the weather, and had not forgotten the instructions I gave, you would not have come into this painful position. When, about a couple of weeks ago, an inundation took place, all the shepherds that were in the neighbourhood collected in haste and came to me for advice and promised to do what I recommended."

ENGLISH.

1. Parse fully :—"Sometimes what we regard as our defects may prove a real advantage."

2. Write a short essay on *one* of the following subjects :—

(*a*) "Science is the handmaid of invention."

(*b*) Advantages and disadvantages of anonymous journalism.

(*c*) The causes of Britain's commercial greatness.

ARITHMETIC.

1. A beam 20 feet long, 2½ feet wide, and 10 inches thick weighs 17 cwt. 3 qrs. 12 lbs. ; what must be the thickness of another beam of the same material 18¾ feet long, 4½ feet wide, weighing 12 cwt. 6 lbs. ?

2. Express 9/13 of £9 6*s.* 10½*d* + ·3$\dot{5}\dot{4}$ of 16*s.* as the decimal of 3*s.* 6*d.*

3. If a gramme of hydrogen occupies 11·316 litres, what would be the approximate weight in grains of 356 litres of hydrogen?

FRENCH.

1. Translate into English :—

On fit ensuite une de ces énormes fautes dont le ministère ne s'est corrigé que dans nos derniers temps : ce fut d'altérer les monnaies, de faire des refontes inégales, de donner aux écus une valeur non proportionnée à celle des quarts. Il arriva que, les quarts étant plus forts et les écus plus faibles, tous les quarts furent portés dans le pays étranger ; ils y furent frappés en écus, sur lesquels il y avait à gagner en les reversant en France. Il faut qu'un pays soit bien bon par lui-même pour subsister encore avec force après avoir essuyé si souvent de pareilles secousses. On n'était pas encore instruit ; la finance était alors, comme la physique, une science de vaines conjectures.

2. Translate into French :—

There is no month in the whole year in which nature wears a more beautiful appearance than in the month of August ; it comes when we remember nothing but clear skies, green fields, and sweet flowers ; when the recollection of snow and ice and cold winds has passed away from our minds as completely as they have disappeared from the earth, and yet what a pleasant time it is !

GERMAN.

1. Translate into English :—

Drei edle Schweizer, die ihr Vaterland liebten, Werner Stauffacher, Walther Fürst und Arnold Winkelried, beschlossen daselbe von den grausamen Vögten zu befreien. Sie wussten, dass die Bauern ihnen beistehen würden. Arnold hatte noch besondere Ursache, sich an den Vögten zu rächen. Einer von diesen hatte ihm nämlich, eines kleinen Fehlers wegen, seine schönsten Ochsen aus dem Pfluge spannen lassen, und als er sich darüber beklagte, antwortete der Knecht : "Wenn der Bauer Brod essen will, soll er selbst den Pflug ziehen." Arnold schlug im Zorn den Knecht auf die Hand, darauf entfloh er, und der Vogt liess seinem Vater die Augen ausstechen. Diese drei Männer kamen im November 1307 an einem einsamen Ort zusammen, und jeder brachte zehn Freunde mit. Die drei Anführer schwuren, im Namen Gottes, das Land zu befreien ; die andern folgten ihrem Beispiel. Am Neujahrstag des nächsten Jahres sollte ihr Vorhaben ausgeführt werden, und bis dahin ging jeder wieder ruhig in seine Hütte.

2. Translate into German :—

There is no month in the whole year in which nature wears a more beautiful appearance than in the month of August ; it comes when we remember nothing but clear skies, green fields, and sweet flowers ; when the recollection of snow and ice and cold winds has passed away from our minds as completely as they have disappeared from the earth, and yet what a pleasant time it is !

SECOND PAPER.

(*Time allowed—from* 3 *p.m. to* 5 *p.m.*)

CHEMISTRY.

1. How is iodine prepared ? Give its characters and chief tests.

2. What reasons have we for believing that air is a mechanical and not a chemical combination of nitrogen and oxygen ?

PHARMACY.

1. Define (*a*) elutriation, (*b*) lixiviation, and mention a Pharmacopœia process in which the former is employed.

2. Describe the official process for the manufacture of citrate of iron and quinine.

BOTANY.

1. Define bracts, tendrils, spines, and stipules.

2. Write a short account of the food of plants.

MANCHESTER PHARMACEUTICAL ASSOCIATION SCHOLARSHIP EXAMINATION.

FIRST PAPER.

(*Time allowed,* 11 *a.m, to* 2 *p.m.*)

LATIN.

Translate into English either A (CAESAR) or B (VIRGIL).

(Candidates must not attempt both Authors.)

A.—(CAESAR.)

1. Translate into English :—

Qui suum timorem in rei frumentariae simulationem angustiasque itinerum conferrent, facere arroganter, quum aut de officio imperatoris desperare, aut praescribere viderentur. Haec sibi esse curae : frumentum Sequanos, Leucos, Lingones subministrare, jamque esse in agris frumenta matura ; de itinere ipsos brevi tempore judicaturos. Quod non fore dicto audientes neque signa laturi dicantur, nihil se ea re commoveri ; scire enim, quibuscumque exercitus dicto audiens non fuerit, aut male re gesta fortunam defuisse, aut aliquo facinore comperto avaritiam esse convictam : suam innocentiam perpetua vita, felicitatem Helvetiorum bello esse perspectam.

2. Parse fully—*judicaturos, fore, audientes, commoveri, dicto, perspectam, Haec sibi esse curae.* (Question 1.)

B.—VIRGIL.

1. Translate into English :—

Tum litore curvo
Exstruimusque toros dapibusque epulamur opimis.
At subitae horrifico lapsu de montibus adsunt
Harpyiae et magnis quatiunt clangoribus alas,
Diripiuntque dapes contactuque omnia foedant
Immundo ; tum vox taetrum dira inter odorem.
Rursum in secessu longo sub rupe cavata
Arboribus clausi circum atque horrentibus umbris
Instruimus mensas arisque reponimus ignem :
Rursum ex diverso caeli caecisque latebris
Turba sonans praedam pedibus circumvolat uncis,
Polluit ore dapes. Sociis tunc arma capessant,
Edico, et dira bellum cum gente gerendum.

2. Parse fully—*opimis, dapes, cavata, sonans, capessant, gerendum.* (Question 1.)

(FOR ALL CANDIDATES.)

3. Translate into English :—

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SECOND PAPER.

(*Time allowed—from* 3 *p.m. to* 5 *p.m.*)

CHEMISTRY.

1. How is lime prepared? What occurs in the process of "slaking"? Write equation.

2. Explain the Pharmacopœia process for the manufacture of tartaric acid from cream of tartar.

PHARMACY.

1. Define (*a*) fractional and (*b*) destructive distillation. Name a Pharmacopœia product obtained by the latter.

2. Describe the official process for the manufacture of a granular effervescing preparation.

BOTANY.

1. Define bulb, corm, rhizome, phyllode, and adventitious.

2. Give a short account of the circulation of the sap.

COUNCIL PRIZES EXAMINATION.

July 15, 1896.

BOTANY.

Time—10 *a.m. to* 11.30 *a.m.*

1. Give an account, with diagrams, of the structure of a typical dicotyledonous leaf, and state fully the functions of the several parts.

2. Describe the structure, and manner of development from the pistil (*gynœcium*), of a fleshy fruit.

Mention some of the commoner means of distribution of fruits.

3. Enumerate the most convenient characters by which one may recognise the most important Natural Orders included in the *Calyciflorœ*.

Describe any flower belonging to one of the Natural Orders mentioned, illustrating a means for favouring cross-fertilisation.

4. What is the nature and function of each of the following structures :—Callus, Sclerenchymatous Fibres, "Silver Grain" of Oak, Tendrils of Virginian Creeper (*Ampelopsis*), Calyx of Helleborus, Calyx of Dandelion, Potato tuber, Tulip bulb ?

MATERIA MEDICA.

Time—11.30 *a.m. to* 1 *p.m.*

1. Describe the varieties of Aconite Root that are used for medicinal purposes, give their botanical and geographical sources. Give a brief account of the constituents of the official root.

2. How is Menthol obtained? Give characters and tests to indicate (1) its purity, (2) its chemical nature.

2. Give some account of the preparation of Olive Oil. What are the causes of variation in quality of the genuine oil? How would you examine it for adulteration?

4. Describe with the aid of diagrams the structure of the roots of *Taraxacum officinale* and *Anacyclus pyrethrum*.

CHEMISTRY.

Time—2 *to* 5 *p.m.*

1. Explain the differences between Mannitol, Dulcitol, Galactose, Mannose, Glucose, and Laevulose.

2. What metals are commonly obtained by electrolytic processes at the present time, and how?

3. What is ethylic acetoacetate, and how is it prepared? Indicate some of the more important reactions in which it takes part.

4. Give a full description of how you would propose experimentally to determine the amount of heat which is liberated when strong sulphuric acid is mixed with water.

5. Give any instances with which you are acquainted of the formation of ring-compounds of carbon.

6. Give a clear account of the chief phenomena upon which the theory of *dissociation in solution* is founded.

ROYAL SOCIETY.

INTERNATIONAL CONFERENCE AT BURLINGTON HOUSE.

The conference arranged by the Royal Society to consider proposals for an International Catalogue of Scientific Literature was formally opened at Burlington House on Tuesday last, with Sir John Gorst, M.P., in the chair. Since 1867 the Royal Society has been publishing catalogues of scientific papers under authors' names, which are at present being supplemented by a catalogue of papers in journals not previously dealt with, whilst it is proposed also to publish a subject index to the volumes already published. But the enormous labour involved in the compilation of a complete general index of all scientific literature was felt to be too great for the Society to bear unaided, and three years ago an inquiry was commenced into the possibility of carrying out the work by international co-operation. As the result of the replies received to a circular sent to all bodies interested in the matter, the President and Council of the Royal Society were requested to take measures for summoning an international conference. On the suggestion of the Society, therefore, invitations were issued by the British Government to foreign governments, India, and the Colonies, and on Monday evening the delegates appointed were formally received by Sir Joseph Lister, the President of the Royal Society, at an "At Home" in the Society's apartments, Burlington House, whilst the business proceedings were commenced on the following day.

The proceedings at the "At Home" were social only, and after the reception of the delegates and guests by Sir Joseph Lister, a miniature babble of tongues prevailed, snatches of sentences in many languages being overheard, whilst cigars or cigarettes and light refreshments were being consumed. France, Italy, Germany, Austria, Holland, Belgium, Portugal, Sweden, Norway, Russia, Hungary, Greece, Switzerland, Japan, Brazil, Mexico, Canada, Cape Colony, India, Natal, New South Wales, New Zealand, and the United States were represented in this exceptionally brilliant scientific gathering, and amongst the distinguished persons present at the reception were:—Sir John Evans (Treasurer of the Royal Society), Professor Michael Foster and Lord Rayleigh (Secretaries), Dr. E. Frankland (Foreign Secretary), the Earl of Rosse, the Italian Ambassador (General Ferrero), the Swiss Minister, Professor F. A. Forel (President of the Swiss Society of Natural Sciences), Herr Schwalbe, Professor Moebeus, Professor Van 't Hoff, Professor Hantaro Nagaska, Professor Gakutaro Osawa, Professor H. E. Armstrong, Mr. J. J. Thornycroft, Mr. H. B. Woodward, Mr. La Fontaine, Professor Lapworth, Sir James Crichton Browne, Professor Dewar, Professor Milne-Edwards, Professor Darboux, Professor Troost, Professor De Weiss, Dr. Billings, Mr. J. Wolfe Barry, Professor Korteweg, Mr. John Milne, Professor Coulton, Professor M'Leod, Mr. R. M'Lachlan, Professor Rücker, Professor Liversedge, Professor Forsyth, Dr. Huggins, Sir J. H. Gilbert, Professor Unwin, Dr. Schunck, Dr. H. R. Mill, Dr. Henry Hicks, Professor Simon Newcomb, Sir John Conroy, Dr. J. Denker, Dr. Gladstone, Professor Greenhill, Professor Seeley, Mr. Crookes, Mr. J. Norman Lockyer, Sir John Kirk, Mr. Bennet Brough, Professor Clifton, Professor S. P. Thompson, Sir Robert Giffen, Dr. Ludwig Mond, Professor Dunstan, Dr. Lauder Brunton, Professor Dick, Dr. J. N. Collie, Mr. G. J. Symons, Mr. Fletcher Moulton, Q.C., Professor Sprengel, Sir Erasmus Ommanney, Professor Boys, Professor W. G. Adams, Professor Reynolds Green, Professor Collie, Professor Tilden, Mr. Thomas Tyrer, and Mr. John Glover.

The sittings of the conference began on Tuesday morning, in strict privacy, at the rooms of the Royal Society, and it is understood that one of the first things done was to appoint an organising committee to determine the mode of procedure, to decide what language or languages shall be used, the course of business, and the method of voting. After these preparatory matters were settled, it was expected that the Royal Society would lay before the delegates a series of resolutions intended to afford a basis for discussion. Sir John Gorst was elected provisional President for the purpose of organising the conference, and after he had welcomed the delegates, work was proceeded with until 1 o'clock when the conference adjourned till 2.30, after which the sitting was resumed and continued until about 5. In the evening the delegates dined together at the Hotel Métropole, resuming business at 10 o'clock on Wednesday morning, then adjourning as before at 1 p.m. till 2.30. After the business of the day the Lord Mayor received the members at the Mansion House, and on Thursday Dr. Ludwig Mond entertained them at a garden party at his house in Avenue Road, Regent's Park.

SOCIETY OF CHEMICAL INDUSTRY.

ANNUAL MEETING.

The members of the Society of Chemical Industry inaugurated their annual business holiday this year by a general meeting held at the Hall of the Carpenters' Company, London Wall, City of London, on Wednesday last. After being welcomed by the master and wardens of the Carpenters' Company, the members at once settled down to business, passed the minutes of the previous general meeting, appointed scrutineers, and received the treasurer's statement and report of the Council, which showed that the Society remains in as prosperous a condition as ever, the membership having increased during the year whilst the revenue still appreciably exceeds expenditure.

The popular President, Mr. Thomas Tyrer, then proceeded to consummate his brief yet fruitful period of activity in that capacity by reading the

PRESIDENTIAL ADDRESS.

Commencing with the assertion that the foundation of the Society had been fully justified, and the need for its continuance and vigorous sustenance greater than ever, the opinion was then expressed that the Council might well consider in what direction the Society's usefulness might be made still more available for the benefit of applied chemistry. The attention of the Council should ever be directed to the general interests of the chemical trade, and its influence maintained as being by no means trivial or insignificant, and as representing probably the widest range of interests over the largest area of any existing society. Watchfulness over patent laws, trade and merchandise marks, pollution of rivers, noxious vapours, secondary education, research endowment, etc., was a duty the Council must continue to perform chiefly by strengthening the action of chambers of commerce where possible.

The constitution and working of the German Society for the Protection of the Interests of Chemical Industry were then described, its functions being such as are in some measure effected here by the Home Office and Local Government Board, watched by the Chambers of Commerce and interested bodies. Each member of that Society pays an entrance fee of twenty marks and an annual subscription proportional to his salary, a plan somewhat foreign to British notions. This "pulling together" of German technologists, however, is a remarkable fact, and powerfully influences the corporate bodies which may affect trade interests.

The recent scare as to the diseases of trades next received attention. It was pointed out that men were not dissolved wholesale in caustic pots, nor boiled in wash tuns or boiling coppers; nor did they fall in alarming numbers into molten metal. Neither did white

lead decimate the Tyne, Sheffield, Hull, or even London, nor did free chlorine or sulphuretted hydrogen in Widnes materially add to the mortality of the alkali works districts. Yet regulations were needed, if only for the mutual encouragement and protection of the unselfish manufacturer and dependent worker.

Lengthy references to German manufactories and methods were summarised by the statement that German pre-eminence in the chemical trade is to be attributed to the fact that the Germans have more knowledge and take more pains, while all our difficulties are of our own making and would find no panacea in protection. That, indeed, would only prove a shorter way to ruin. Germany having had the start of Great Britain in education, is likely to maintain it for many a year; the danger is that we should be turned aside from the true causes of the evils affecting industry and trade, and the true remedies for them.

Commercial education here is still far from being an effective instrument for "pushing" business, few individuals knowing two languages or commercial geography. There is also at present too great a tendency of the State to "tinker" with educational and social legislation, handing over to local, municipal, county, and denominational bodies, matters of Imperial concern. The unselfish liberality which devoted a magnificent sum to the purchase and equipment of the Davy-Faraday Research Laboratory—equipped with the finest "tools" obtainable—set a brilliant example of the individualism which has hitherto characterised British life and activity.

Similar evidences of the liberality of successful men are very manifest in the United States. Americans are modelling their educational system upon the best European plans, and private munificence is more frequent with them than here or on the Continent. Dr. Seth Low's definition of a college as a place for liberal culture and a university as a place for specialisation based on liberal culture is true of Germany and should be so for Britain. The agitation for a teaching university for London is, therefore, a good thing. Moreover, no scheme of education will approach perfection unless it provides for the graduated affiliation of schools and colleges with universities. Educational enterprise is going on rapidly and everywhere in the "Britain beyond the sea," and we should be up and doing before it is too late. The City Companies and Guilds of London—including the Carpenters' Company—are taking a prominent part in supplying the great need for scientific training, and with all the resources of this wealthy country, the practicality of its people, and the public spirit of its citizens, we ought to remain very little longer in a state of educational backwardness. It is but necessary that the State shall define the need and the steps by which that need shall be met, and then resolutely carry them out.

Presentation of the Society's Medal.

At the conclusion of his address, Mr. Tyrer, as President, presented the Society's Medal to Mr. John Glover, the venerable inventor of the "Glover" tower, remarking that it was awarded for conspicuous service to applied chemistry. To the use of this tower may be ascribed the whole of the saving of nitrate of soda in alkali works, inasmuch as it enables manufacturers to avail themselves of the Gay-Lussac tower, and it has given hints as to further improvements in the manufacture of sulphuric acid, marking, indeed, an epoch in its development. The President said this was the first medal so awarded, and if it was any satisfaction to Mr. Glover—who took no patent and no great reward for his invention—to receive it, in recognition by the Society of his great and valuable services, it was no less a satisfaction to the members to present it to him, and they wished him continued length of days in happy retirement, with the satisfaction of knowing that he had contributed beyond the ordinary to the well-being and prosperity of his fellows.

Mr. Glover, in acknowledging the distinction conferred upon him by the presentation of the medal, referred at length to the history of the "Glover" Tower, relating how he came to devise it and the unexpectedly great results obtained from the very outset by using the apparatus. He was most heartily received by the members, who listened with great attention to the veteran chemist's interesting remarks.

Election of Officers.

The scrutineers' report was next received, and Mr. Tyrer announced that the following, including some who stood for re-election, had been elected officers for the ensuing year in place of those who retire :—

President	Dr. Edward Schunck, F.R.S.
Vice-Presidents	Thomas Tyrer. Professor A. K. Huntington. A. H. Mason. G. N. Stoker.
Ordinary Members of Council	George Beilby. Oscar Guttmann. B E. R. Newlands. R. Forbes Carpenter.
Treasurer	E. Rider Cook.
Foreign Secretary	Dr. Ludwig Mond, F.R.S.

Vote of Thanks.

Dr. Schunck, who was introduced as the new President by Mr. Tyrer, then proceeded to move a vote of thanks to the latter for his services during the year as President, and also for his lengthy and instructive address, upon which Dr. Schunck commented briefly and appreciatively.

Sir Henry Roscoe seconded the vote of thanks, and spoke of the wonderful advances that had taken place in the teaching and practice of chemistry during the past thirty years.

The vote having been unanimously affirmed by acclamation, the concluding miscellaneous business of the meeting was quickly disposed of, and the company adjourned to the Cannon Street Hotel for luncheon, after which parties were formed to visit various places of interest.

Visits to Places of Interest.

These included the Tower Bridge, the machinery of which was exhibited by permission of the City Corporation; the New Cold Storage and Refrigerating Machinery of the Colonial Consignment and Distributing Company, at Nelson's Wharf, Commercial Road, Lambeth, and the same Company's smaller installation beneath the Cannon Street Hotel and Station; Messrs. Coombe, Delafield and Co.'s Brewery, Castle Street, Long Acre, where pure yeast culture was shown and explained by Mr. Frank Wilson, President of the Institute of Brewers; and Messrs. Reid and Co.'s Brewery, Clerkenwell Road.

Reception at the Mansion House.

The same evening the members of the Society were received at the Mansion House by the Right Honourable the Lord Mayor, Sir Walter Wilkin, and the Lady Mayoress. There was a large and brilliant company, and the proceedings continued until a late hour.

Excursions, Dinner, etc.

The river Thames excursion, from Caversham to Windsor, took place on Thursday, as the Journal was going to press, and the arrangements for Friday included visits to Woolwich Arsenal and Messrs. Siemens Bros.' Works, followed by the President's reception, dinner, and smoking concert at the Hotel Cecil. Reports of these later proceedings are necessarily postponed until next week.

PROCEEDINGS UNDER THE PHARMACY ACT.

Illegal Sale of Laudanum.

Pharmaceutical Society of Great Britain v. *Blakeley.*

On Wednesday last at the County Court, King's Lynn, before His Honour Judge Addison, Q.C., the Council of the Pharmaceutical Society sued S. T. Blakeley, of Snettisham, Norfolk, to recover a penalty of £5 for keeping open shop for the retailing of poison contrary to the provisions of the Pharmacy Act, 1868.

Mr. T. R. Grey, instructed by Flux, Thompson, and Flux, appeared for the Society. Defendant did not appear.

Mr. Grey stated that defendant carried on a business at Snettisham, which he styled Blakeley's Drug Stores, and at this shop in February last a preparation of opium known as laudanum was purchased. After referring to various Sections of the Act, he pointed out that all persons keeping open shop for the retailing of poison were required by the Statute to be duly qualified and registered chemists and druggists, and that in the Schedule it would be found that opium and all preparations of opium were included as poisons. By Section 15 the penalty for every offence was £5.

His Honour: Does that mean a penalty up to £5?

Mr. Grey: No, it is a fixed amount; it is only in Section 17 that you have the words "not exceeding," and that applies only to penalties for offences under that section.

Jonathan Mitchinson, examined by Mr. Grey: I went to Snettisham on February 11 last to the shop styled Blakeley's Drug Stores. I asked for two ounces of laudanum. It was sold to me in the bottle produced, and was labelled "Blakeley's Drug Stores, late Metcalfe, Snettisham."

His Honour: How do you connect defendant with the shop?

Mr. Grey: There are the labels on the purchases made by the witness, bearing defendant's name coupled with the words "Drug Stores," and defendant has also replied to a letter sent to him by the Society's solicitors. There is also the fact that the summons in this action was served upon defendant at his shop at Snettisham by an officer of the court.

His Honour: If the bailiff is here let him be called.

Robert G. Whincop in answer to His Honour said: I am a bailiff of the Court. The summons was addressed to defendant, I served it upon him personally in the shop at Snettisham—I understood he was the proprietor.

Harry Moon proved receiving the bottle containing laudanum and handing it to the analyst.

Ernest John Eastes, F.I.C., examined by Mr. Grey: I am an analyst; analysed contents of bottle produced, found it to contain a preparation of opium, called laudanum, found the amount of morphine to be 1·6 grain, equivalent to 16 grains of opium of the strength ordered in the British Pharmacopœia.

His Honour: Was there enough to be poisonous?

Witness: Enough to kill two or three persons.

His Honour: Would a small quantity be dangerous?

Witness: Opium is toxic in very small quantities.

His Honour: The penalty is £5. Is there anything about costs?

Mr. Grey: By the terms of Section 13 in the Act of 1852 the plaintiffs, being successful, are entitled to full costs.

His Honour: Very well. I give judgment for the plaintiffs for the penalty of £5, with full costs of suit.

NEW REMEDIES.

[*The notes given under this heading embody recent suggestions in therapeutics. They cover both new drugs and preparations, and old ones under new aspects. The word "parts" is used to represent parts by weight, both for solids and liquids.*]

PERMANGANATE OF POTASSIUM FOR PRURITUS.—The local application of a 1 or 2 per cent. solution of potassium permanganate has been found by Bulkley to allay the troublesome itching of many skin diseases. It is merely painted over the itching surface and allowed to dry. Sometimes it is advisable to follow this with a lotion of calamine and zinc oxide (*Therap. Gaz.* [3], xii., 258).

PARALDEHYDE IN ASTHMA.—Dr. Hearder calls attention (*B. M. J.*, 1/96, 725) to the valuable, but little known, property of the drug as an antispasmodic in asthma. With a dose of 45 to 60 minims relief is generally rapid and complete, a few cases requiring a second dose of 30 to 45 minims at the expiration of an hour.

IODOFORM IN GOITRE.—Garré has employed parenchymatous injection of iodoform in goitre in 140 cases with excellent results. The solution employed consists of iodoform, 1 gramme; olive oil and ether, of each 7 grammes. One cubic centimetre is injected into the goitre every two to five days, a total of seven generally sufficing (*Pract.*, lvi., 334, after *Wiener Med. Presse*).

BENZOSOL IN DIABETES.—The favourable influence of benzoylguaiacol (benzosol) noticed by Piatowski in cases of diabetes has been confirmed by White. The dose is 1 or more grains gradually increased up to 15 grains per diem. Under treatment with benzosol the excretion of sugar lessens, appetite, digestion, and assimilation are improved, and a stimulating effect on the nerve centres produced (*Med. Chron.*, new ser. iv., 444, after *Amer. Med. Surg. Bull.*).

CALAYA IN MALARIA.—An extract of calaya, a leguminous plant, *Anneslea febrifuga*, has been used by Mauraye in the treatment of malarial cases from Madagascar. Four doses of half a drachm each were given every two hours. The antipyretic action was very marked, but was not accompanied by sweating or depression, nor did the temperature ever fall below normal. In three out of nine cases there was no recurrence; in the rest after a second treatment there were no relapses (*Lancet*, 1/96)

CORRESPONDENCE.

OXALIC ACID OR SALTPETRE.

Sir,—I can, perhaps, throw some light upon the matter that perplexes a "Scotch Chemist." In the Museum of the Society there are four specimens of oxalic acid in crystals. One of these is the ordinary kind of crystal, which ought not to be mistaken for Epsom salts of the ordinary kind; the second is in small slender prisms, and might easily be mistaken by any apprentice for Epsom salts; the third is so like crystals of purified saltpetre that any examinee who had never seen it before might easily call it potassium nitrate if it were shown to him; and the fourth might (except for its yellowish tint) be easily taken for potassium bicarbonate in crystals. There is yet another possible cause of confusion between oxalic acid and Epsom salts. The latter is sometimes kept by retail chemists in "large crystals," under which name it appears in most wholesale drug lists. These crystals are not unlike ordinary oxalic acid in size and general appearance. Unfortunately, the limited time at the disposal of students attending lectures on materia medica under present circumstances does not permit of dealing fully with the commercial varieties of drugs. I would venture, therefore, to advise every apprentice to endeavour during his apprenticeship to make himself familiar with the appearance of every quality of drug mentioned in the ordinary wholesale price list. The chemist who does not know how far the appearance and quality of drugs vary cannot be considered to be fully equipped for his business. I have for years collected for the Museum every quality of drug that I have met with in commerce, and it is always a pleasure to me to help any student, who has no opportunity of seeing such specimens during apprenticeship, to avail himself of the chance of getting such information as the Museum affords.

17, *Bloomsbury Square, W.C.*, *July* 11, 1896. E. M. HOLMES. *Curator.*

THE PRELIMINARY EXAMINATION.

Sir,—"This year's Minor" essays to give your readers his opinion of the Preliminary and Minor examinations. *Re* the latter "more scientific and thorough" is far too vague. "Six or twelve (which?) months at some good school." Your correspondent may rest assured that when a curriculum is in force only good schools will be recognised. I am puzzled over what he says about the Preliminary, either through thickheadedness on my part or bad composition on his; I cannot understand how he brings out this examination as a snare. I have frequently heard it spoken of in similar terms, but strange to say the argument used was the reverse of "this Year's Minor." I have in my mind a man who presented himself for the Preliminary examination more than "five or six times before passing." I marvelled, not that he had tried so often, but that he succeeded in passing. As he knew the extent of the examination before he put on an apron he certainly was not "snared."

Edinburgh, *July* 8, 1896. A. P. S.

"CONDY'S FLUID."

Sir,—It is no imaginary grievance to which your attention is directed by the letter of "A. P. S." When his customers ask for "Condy's Fluid Crystals," he may avoid the risk of legal proceedings by refusing to sell anything, or, which is preferable, supply the permanganate after giving a lengthy explanation of the circumstances, which explanation, if not treated with contempt, is not always comprehended. As the case stands, it amounts practically to a monopoly or restriction, which ought not to be. I would suggest as a remedy that the chemical in question be furnished with a new name, or at least a synonym, which the "masses" could handle as easily as they do "Condy," and the principle might with advantage be extended to other chemicals in frequent use, which at present are known only by their scientific or constructive names.

Southsea, *July* 11. THOS. POSTLETHWAITE.

ANALYSIS OF CREAM OF TARTAR.

Sir,—On page 40 a correspondent, who signs himself "Pharmacist," expresses his desire to point out the very misleading statement contained in paragraph 2*a* of the process which he asserts I propose as a pharmaceutical test of purity for cream of tartar. I did not suggest this process as the ordinary Pharmacopœia test. On the contrary, I recommended direct titration of a sample of cream of tartar with standard alkali, and proposed the use of the 2*a* process "where further information is required." The value of

a contribution to any controversy depends on the cogency of the arguments adduced and, in the absence of arguments, on the authority of the person who expresses his opinion. The letter of your correspondent satisfies neither of these conditions, for "Pharmacist" substitutes a mere statement for argument, and does not back his opinion by publishing his name. If "Pharmacist" will write again, giving his name and explaining why he objects to section 2*a* of my proposed process for the analysis of cream of tartar, I shall be happy to consider his objections, and accept them or refute them as the case may seem to warrant. But if your correspondent will refer to the original paper, as published in the June number of the *Analyst*, it is possible that the additional information therein contained will itself answer his objection.

Sheffield, July 10, 1896, ALFRED H. ALLEN.

THE COMPOSITION AND ASSAY OF CREAM OF TARTAR.

Sir,—In the *Pharmaceutical Journal* of July 4 appears an abstract of an article by Mr. A. H. Allen on the composition and analysis of commercial cream of tartar, in which he states that "much of the cream of tartar of commerce now contains several units per cent. of calcium sulphate." This statement, and the subsequent account of the effect of calcium sulphate on the B.P. method of assay, are in accordance with my observations, as recorded in the *Pharmaceutical Journal* of April 11.

The process given by Mr. Allen for determining the potassium hydrogen tartrate differs from that recommended in the above-mentioned communication only in detail; working according to Mr. Allen's directions, nearly 100 C. c.'s of the standard solution are required, and he recommends "in cases of importance" operating on a double quantity. The use of such large quantities of the standard solution is inconvenient; whilst the method of the U.S.P. on the other hand is objectionable, since ·1 C. c. of the standard solution is equivalent to 1 per cent. of potassium hydrogen tartrate.

The statements made by Mr. Allen and by myself, taken in conjunction with a letter from Messrs. Kirkpatrick, Barr, and Guthrie, that appeared in the number of this Journal for May 23, should convince Mr. Conroy, who "takes exception to" my "statement that commercial cream of tartar contains calcium sulphate in sufficient quantity to appreciably affect the B.P. method of assay" (*vide ante*, p. 346).

Southwark Street, S.E., July 13, 1896. C. A. HILL.

PHARMACEUTICAL EDUCATION FOR THE MILLION.

Sir,—The following extracts are from an article on "Patent Medicines and Foods," published in the *Dawn of Day* for this month:—

"*Patent Medicines and Foods.*"

I. "Some of these patent medicines contain powerful poisons, yet they can be bought over the counter of a grocer or of an oilman without any restriction."

II. "Doctors view with suspicion any preparation of which the composition is concealed, and for which a patent is taken out, making it a proprietary article."

III. "As we said before, the ease with which patent medicines can be bought constitutes their chief danger; a poison, if sold as such, is only sold on the order of a medical man, and under certain restrictions, which enable it to be traced if used by misadventure, but when the poison is put into a patent medicine it may be sold unquestioned to any casual customer."

Now, each month 1750 of these (after being first encased with two or three leaves of church notices and local advertisements at each end) are distributed in this parish as *All Saints' Parish Magazine*, Northampton. Probably the *Dawn of Day* is similarly issued in hundreds of other towns. Surely more care should be taken to provide readers with accurate up-to-date knowledge, especially in Church magazines, which are probably the best read periodicals, and, in this case, delivered free to every house in the parish.

Northampton, July 13, 1896. J. CLOWER.

THE SOLUBILITY OF COCAINE IN VASELINE.

Sir,—Since the publication of the eighth edition of the 'Extra Pharmacopœia,' I have had similar experience to that referred to in last week's Journal (p. 28), and found that cocaine was not soluble 1 in 20 in adepsine oil or in cold vaseline, although years ago I found that it was held in solution 1 in 20 of vaseline as long as this remained liquid after heating to dissolve. Would Mr. Sage kindly give us some constructive information, and say from microscopic examination what proportion of cocaine is held in solution in solidified vaseline and solidified lard at the ordinary temperature? An aqueous solution of the hydrochloride mixed with fats is pharmaceutically unsatisfactory, as the salt also crystallises on evaporation of the water. Cocaine is soluble in many fixed oils to the extent of 1 in 10, but a sudden lowering of the temperature below the ordinary makes it crystallise out of solution.

10, *New Cavendish St., W., July* 13, 1896. W. MARTINDALE.

THE SWEET SPIRIT OF NITRE DIFFICULTY.

Sir,—Samples of sweet spirit of nitre were recently taken in this town for analysis, and of ten examined eight were declared by the analyst to be "adulterated," or, as the Town Clerk publicly explained afterwards, "a portion of their component parts had evaporated through being kept too long." In fact, I understand none of the samples reached the full Pharmacopœia standard, though ten samples of laudanum taken at the same time from the same chemists were all found correct and according to B.P.

Though in my own case sp. æth. nit. B.P. was supplied, there is a question with the town authorities as to whether the B.P. can be taken as the standard unless spts. of nitrous æther is asked for. I, in common with most of my brother chemists, am under the impression that when sweet spirit of nitre is asked for, the old P.L., or spirit. æth. nit. ·850, answers all legal requirements, as the synonym "sweet spirit of nitre" does not appear in the B.P.

Nottingham, July 14, 1896. R. WIDDOWSON.

ANSWERS TO QUERIES.

[*Queries addressed to the "Editorial Department, 17, Bloomsbury Square, W.C.," will be replied to in the Journal as early as possible after receipt, but the Editor cannot undertake to reply to them through the post, nor is it always possible to publish answers the same week. Questions on different subjects should be written on separate slips of paper, each of which should bear the sender's name or initials. Readers requiring working formulæ for special preparations, and intimating their wants to the Editor, will be assisted as far as may be practicable. The word "parts," when used in formulæ, invariably indicates parts by weight.*]

'THE TAX-PAYERS' CASH BOOK.'—Full particulars of this book were given in the Journal for June 6, page 445. [*Reply to* "Ɔi."]

PLANT IDENTIFIED.—Probably *Arum dracunculus*, but a leaf is insufficient for accurate determination. [*Reply to* C. RICHARDS.]

CHEMICAL EQUATIONS.—Chemists endeavour to ascertain what takes place during chemical reactions, and represent the results with more or less accuracy by means of equations. You, on the contrary, seem to expect that reactions should adapt themselves to equations. Hence the cause of your "seeming anomaly." In the first case you instance, the water takes no part in the reaction, and a sulphide is one of the products; in the second the water enters into combination, and a hydrate results. Note, by the way, that your first equation is incomplete, a molecule of H_2S being omitted [*Reply to* "BEGINNER."]

DISPENSING DIFFICULTY.—Bassorin paste is evidently meant to be used. To prepare this, take powdered tragacanth, 5 parts; rectified spirit, 10 parts; glycerin, 2 parts; and water, to 100 parts. Diffuse tragacanth in spirit in wide-mouthed bottle, add an equal bulk of water, then glycerin diluted with equal quantity of water, and shake well. [*Reply to* "VERAX."]

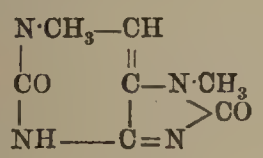
MEDICAL SPECIALISTS.—We are unable to give the information you require. Apply to your family medical man, or to a local hospital. [*Reply to* "STUDENT."]

BOOK ON ORGANIC CHEMISTRY.—Perkin and Kipping's 'Organic Chemistry' (W. and R. Chambers. 6*s.* 6*d.*) is the most suitable book for your purpose. [*Reply* to "W. F."]

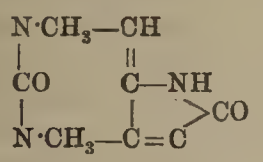
COMMUNICATIONS, LETTERS, ETC., have been received from Messrs. Allen, Atkinson, Baxter, Child, Clower, Endon, Forret, Foster, Fowler, Gibbs, Hallaway, Hemming, Hill, Horniblow, Ince, Knight, Mosley, Postlethwaite, Ransom, Richards, Scott, Shatlock, Sparkes, Taylor, Thompson, Turnbull, Tyrer, Umney, Wardleworth, Williams, Wright, Young.

"THE MONTH."

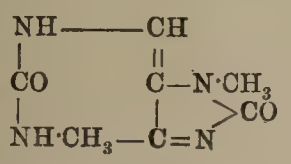
Pseudo-Theobromine. The resemblance of xanthine, theobromine and caffeine was noticed by Strecker, who suggested that these bases formed an homologous series, but he was unable to convert xanthine into theobromine by methylating xanthine silver. The dimethyl xanthine so produced is not theobromine. E. Fischer, operating on another xanthine compound, has since obtained a product possessing all the characters of theobromine and convertible into caffeine. He also showed that theobromine is really a dimethyl xanthine, the structure of which is represented by the first formula shown—



Theoretically, the two methyl groups may be differently situated, giving rise to two other compounds of the same composition. One of these is theophyllin, which contains both methyl groups in the alloxan nucleus (Kossel).



The third possible isomer, which would be represented by the third formula, might be the one obtained by Strecker by the action of methyl iodide upon xanthine silver, and an investigation of the subject by Pommerehne has shown that to be probably the case (*Archiv. der Pharm.*, 234, 367).



Protogen. A new class of albuminous products produced by Dr. Blum, of Frankfurt, are represented by him as being methylene compounds of albumin in which the coagulable character of albumin has been done away with. These compounds are obtained by the action of formic aldehyde upon serum or egg albumin, but they do not contain formic aldehyde and are probably albumin derivatives in which two hydrogen atoms of one or two amido groups are replaced by methylene—

$$\begin{matrix} -NH_2 \\ -NH_2 \end{matrix} + CH_2O = \begin{matrix} NH \\ NH \end{matrix}\!\!>\!CH_2 + H_2O$$

$$\text{or } -NH_2 + CH_2O = N{=}CH_2 + H_2O$$

Oviprotogen—one of these products—is prepared at the Meister Lucius and Bruning factory. It is a yellow powder containing 7·1 per cent. water and 12·7 per cent. of nitrogen, equivalent to about 80 per cent. of albumin. When heated to remove the water it becomes to a great extent insoluble. Dr. Blum anticipates that protogen will be useful as an addition to milk and in feeding children, as well as for subcutaneous injection, since experiments made with animals have given good results (*Zeitschr. Phys. Chem.*, xxii., 127, and *Berl. Klin. Wschr.*, 27).

Raphanol. By distilling slowly the product of the maceration of roots of *Raphanus niger* in cold water, H. Moreigne has obtained a new volatile crystalline body, which he calls raphanol. It is carried over along with essential oil, from which it is separated by recrystallisation from ether. The pure substance forms white, odourless, pearly, microscopic crystals melting at 62°, insoluble in water, readily dissolved in ether and chloroform, also in the essential oil of raphanus, insoluble in alkali and in weak acids. When burnt it was found to have the molecular formula $C_{29}H_{58}O_4$, which was confirmed by the cryoscopic method of Raoul. The general behaviour of the body, determined as far as the small amount of material would permit, indicated that it is probably a lactone. The same body has been found by the author in other crucifers, such as the red radish, turnip, long radish, watercress, and scurvy grass (*Journ. de Pharm.* [6], iv., 10).

Ferricyanide Test for Morphine. Professor Schaer has studied the action of morphine upon ferric salts and upon potassium ferricyanide: he comes to the conclusion that morphine reduces ferric chloride as well as ferricyanide, and that when it is brought in contact with neutral solutions the reducing action exercised upon the ferric chloride is greater than that exercised upon ferricyanide, while in acid solutions the ferricyanide is more largely reduced. When morphine is brought in contact with mixed solutions of the two salts the blue precipitate produced always consists for the most part of Prussian blue, with relatively smaller proportions of Turnbull's blue. Acetanilide exercises a similar reducing action upon ferric chloride and ferricyanide, but in a less intense degree. When brought in contact with a mixture of the two salts acetanilide generally produces an immediate energetic reduction, with formation of a blue precipitate, which in neutral solutions consists for the most part of Turnbull's blue, while in acid solutions the precipitate is chiefly Prussian blue, as in the morphine reaction. Neither morphine nor acetanilide produce a blue precipitate or coloration with mixtures of ferric acetate (or other forms of soluble ferric oxide) and ferricyanide; under these conditions there is no reduction of the ferric salt, or probably of the ferricyanide (*Archiv. Pharm.*, 234, 348).

Atroscine. A preliminary report by Dr. Königshöfer on the use in ophthalmic practice of the mydriatic alkaloid identified by Hesse as being present in variable amount in the hyoscine hydrobromide (or scopolamine hydrobromide) of commerce, appears to show that there is a practical side to the subject lately matter of dispute between Hesse, Ladenburg, and Schmidt. Dr. Königshöfer states as the result of his observations that, as compared with atropine and scopolamine, atroscine has an equal effect in dilating the pupil, but that its influence upon the accommodation is much more advantageous, to the extent of double or four-fold. Atroscine has also a stronger action upon the ciliary muscles and, for solutions of a given concentration, it allays irritation more effectually than the other mydriatic alkaloids. On the strength of these observations the inference may be drawn that the value of the commercial salts of hyoscine or scopolamine for ophthalmic purposes is proportionate to the greater or less amount of atroscine present in them and indicated by the small rotatory power (*Berichte*, xxix., 1781).

Creatinine. The question raised by G. S. Johnson whether there may not be several different kinds of creatinine has been investigated in the Marburg Laboratory by Toppelius and Pommerehne, with the general result that no difference could be detected between the creatinine obtained from flesh, that from urine, and synthetic creatine. The melting point of the picrates did not differ more than one or two degrees, the solubility of the platinum salts was the same; their melting points, as well as those of the gold salts, were in all cases the same. In like manner the reducing action of creatinine from various sources was found to to be so little different as to justify the conclusion that the creatinine obtained from different sources is in all cases identical. Creatinine hydrochloride extracted from urine was found to crystallise from water solution with one molecule of water and not anhydrous, but when crystallised from a solution containing excess of hydrochloric acid, the crystals are anhydrous, and this was found to be the case with the salts prepared with creatinine from other sources. The distinction drawn by Johnson between "efflorescent" and "tabular" crystals of creatinine was also found to be entirely due to the conditions of crystallisation, each form being convertible into the other (*Archiv. der Pharm.*, 234, 380).

Geraniol and Rhodinol. According to Bertram and Gildemeister, the general results obtained by different observers agree in showing that the fractions of Indian geranium oil (*Andropogon schoenanthus*), of citronella oil (*A. nardus*), and of rose oil, boiling near 230° C., consist almost entirely of geraniol. The ethereal oils of the different varieties of pelargoniums, the French, African, and Réunion geranium oils, also contain in the fractions, boiling between 225°–230° C., a considerable amount of geraniol, but it is always mixed with another alcoholic ingredient that has not yet been isolated and examined. The authors object to the proposal of Erdmann and Huth to apply the name of rhodinol to geraniol, because the name geraniol has a definite application, while the name rhodinol has been applied to several different products: also because the geraniol of pelargonium oil differs from that of rose oil in containing a large quantity of another, undefined alcohol (*Journ. Prakt. Chem.*, 53, 225, 237).

Properties of Tungsten. H. Moissan shows that tungsten can be obtained readily in the electric furnace by the reduction of tungstic acid by means of carbon, and that if the melting point of the metal is not attained, the latter can be obtained in a very pure state. Operating in the presence of excess of carbon or in a carbon crucible, a definite carbide, Tu_2C, is obtained. This dissolves carbon, and subsequently liberates it in the form of graphite. Platinum, rhodium, palladium, and iridium share this property. Tungsten can be filed or forged, and case-hardened with facility. It does not affect the magnetic needle, and its melting point is higher than those of chromium and molybdenum (*Comp. rend.*, cxxiii., 16).

Ferrostyptin. Under this name a hæmostatic preparation has been introduced by Dr. Eichengrun: it is made by Dr. Marquart. It is a reddish-yellow crystalline powder, having a peculiar phenolic odour and sharp saline taste, readily soluble in water, sparingly in alcohol. The water solution is acid and coagulates on addition of acid, but forms a clear solution with more acid. The water solution also coagulates on heating. Ferrostyptin contains 20 per cent. of iron, with ammonium chloride and, apparently, some acetanilide (*Pharm. Zeitung*, 1896, 56).

Replacement of Chlorine by Br_2 and I_2. H. Lloyd Snape has conducted experiments to determine whether the chlorine in chlorides of the non-metals can be replaced by bromine and iodine. R. Brix had previously shown that the elements chlorine, bromine, and iodine replace one another in many organic haloid compounds, when these are heated with metallic chlorides, bromides or iodides, and it was anticipated that the strongly basic element potassium would readily remove chlorine from its comparatively unstable combinations with the non metals, and that the latter when liberated would probably unite with the bromine or iodine simultaneously set free. In the majority of cases it was necessary, owing to the readiness with which most of the non-metallic haloids are attacked by water, to work with absolutely dry materials and out of contact with air, The experiments were, therefore, carried out in sealed tubes, whilst the temperature was regulated when necessary by heating them in a deep glass bath containing paraffin, and an excess of the metallic salt was employed in all instances to avoid the necessity of separating the bromide or iodide of the non-metal formed from any undecomposed chloride. Proceeding in this way, sulphur monochloride, arsenic trichloride, and antimony trichloride were partially converted into their respective bromides by means of potassium bromide, but no similar conversion could be effected by the action of that salt upon carbon tetrachloride and phosphorus trichloride. When potassium iodide was used in the experiments, phosphorus trichloride, arsenic trichloride, and antimony chloride were readily converted into their respective iodides; carbon tetrachloride was only partially attacked, and yielded only free carbon and iodine; sulphur monochloride was much more completely decomposed, but yielded only the elements sulphur and iodine (*Chem. News*, lxxiv., 27).

Oxidation of Aluminium. A correspondent of the Journal recently directed attention (*ante*, p. 40) to the formation of "small white feathery crystals" on aluminium weights, which were found on examination to have become lighter. The specimen sent with the letter proved to consist of alumina, and Mr. Robertson has since explained that he had been weighing mercuric iodide, contact with which doubtless caused chemical action. A similar case is described in a communication to last week's *Chemical News*, in which P. A. E. Richards relates how an aluminium spatula used to convey some mercuric iodide from a bottle to a test-tube became covered with a coating of white powder, after being wiped. Washing with water and subsequent drying of the spatula were followed in a few minutes by the appearance of a brush-like "growth," consisting of white filaments standing upright on the flat surface of the blade. "Whilst watching them they increased visibly, and resembled somewhat the white 'hyphæ' of *Mucor mucedo*." A similar phenomenon was found to follow contact of mercury or any other mercury salt with aluminium for only a minute, and it is suggested that the mercury first forms an amalgam with the aluminium, which reacts with the moisture present in the air or on the surface of the metal, forming alumina and liberating the mercury to form more amalgam. A weighed strip of aluminium, left in contact with powdered mercuric chloride for two minutes, then washed, roughly dried, and left for an hour, was found to have lost a little over eight per cent. of its original weight. These results show that the greatest care should be taken to prevent any aluminium apparatus, etc., being brought into contact with mercury in any shape or form (*Chem. News*, lxxiv., 30).

Strontium Salicylate. F. A. Sieker finds that this compound can be prepared satisfactorily by saturation, the necessary precautions being the selection of a pure carbonate (free from barium) and avoiding contact with iron and overheating. In working on a small scale a porcelain dish is used, and a temperature of about 80° C. is necessary. Mix 276 parts of salicylic acid with 3500 parts of distilled water, and almost neutralise with strontium carbonate, about 148 parts being required. The hot, slightly acid solution is rapidly filtered and evaporated to about half its volume, then set aside to crystallise. On concentrating the mother liquor by evaporation a second crop of crystals is obtained. After washing with cold distilled water and drying at a temperature of about 50° C., the crystals possess a pinkish shade, but they form a pure white powder. If crystallised from a slightly acid solution the salt is feebly acid towards sensitive litmus paper, but on re-crystallisation a neutral salt can be obtained. The composition of the salicylate was found to conform quite closely to the formula—

$$\left\{ C_6H_4{<}^{OH}_{CO\cdot O} \right\}_2 Sr + \cdot 2H_2O = 396{\cdot}56$$

It requires about 18 parts of water for solution at 20° C., but is very much more soluble in boiling water. It is sparingly soluble in cold alcohol. An aqueous solution (1:20) prepared with the aid of a gentle heat should be colourless, or at most possess a pinkish tinge. Such a solution should be clear and free from insoluble matter, neutral or only feebly acid toward sensitive litmus, and respond to the usual tests for strontium and salicylic acid (*Ph. ev.*, xiv., 156).

Nutrose. A food preparation introduced under this name consists of a neutral compound of casein with alkali. It is made by mixing dried casein with the calculated proportion of sodic hydrate, boiling the mixture with alcohol of 94 per cent., and drying. Nutrose is a light finely-divided powder which dissolves in warm milk, water or broth without affecting their taste. When placed on the tongue it has a slight cheesy taste. It is given in quantities of an ounce or two ounces daily, and is readily digestible. Dr. R. Stüve reports that it contains 13 8 per cent. of nitrogen (*Berl. Klin. Wochenschr.*, 1896, p. 429).

Artificial Antitoxin. Experiments instituted by Dr. Smirnow, of St. Petersburg, also by d'Arsonval and Charvin in Paris, have led to the conclusion that diphtheria antitoxin can be produced by means of electrolysis. According to Smirnow, the process consists first in chlorination or electrolysis of the toxin, containing one part sodium chloride in two hundred, with carbon electrodes, and then removing the chlorine by replacing the carbon at the positive pole by a repeatedly-changed silver electrode. The efficacy of the antitoxin thus produced was found to be proportionate to the continuance of the chlorination, so that taking 200 C.c. of toxin broth with 0·5 per cent. sodium chloride for electrolysis and chlorination during seven hours with 45 milliamperes, after subsequent silver treatment for five or six hours, and adding 3 C.c. of 20 per cent. caustic potash solution, an antitoxin was obtained, of which 0·5 to 1 C.c. was sufficient to cure a guinea-pig sixteen or eighteen hours after being infected with 0·1 C.c. diphtheria broth culture, a dose that was sufficient to kill the test animal in twenty-four or from thirty to thirty-five hours after injection. Dr. Smirnow infers from his experiments that antitoxin is an oxidised or hydroxylated toxin: that the electric current has not a specific power of producing antitoxin under the conditions described, but that the antitoxin obtained by the aid of electricity originates from the reaction of the primary electrolytic products of the saline solution with the products of the bacteria—that in fact the influence of the electricity is exercised from the chemical side. Hence it is inferred that the production of a specific for the treatment of diphtheria is not a monopoly of the animal organism, but that it can be effected better and more simply by means of electrolysis (*Berl. Klin. Wschr.*, 1896, No. 27)

Lithio-Piperazine. This preparation is intended to serve the purpose of combining the solvent action of piperazine upon uric acid with the very strong diuretic action of lithium salts, especially those containing an organic acid, on the assumption that those influences are more effectual conjointly than separately. Lithio-piperazine is a light granular powder, readily soluble in water: it is manufactured by Dr. L. C. Marquart (*Apotheker Zeitung*, 1896, No. 56.)

New Medicinal Preparations. The *Pharmaceutische Zeitung* publishes a list of the names of no less than one hundred and fifty new medicinal preparations which have been introduced in Germany within the past six months, In several instances these names apply to two or more different forms of the preparations they refer to.

Turpentine. H. Schiff states that in a pure state turpentine has scarcely any smell and that the smell usually noticeable is due to the presence of a product of oxidation, probably camphoric aldehyde, $C_{10}H_{16}O_3$. On shaking turpentine with sodium bisulphite the odour is removed, and by distilling in an atmosphere of carbonic anhydride, after washing with soda solution, the oil can be obtained almost free from smell. By exposure to the atmosphere the peculiar odour soon returns (*Chemiker Zeitung*, 1896, 20).

Eucaine. Berger reports favourably on the use of this preparation as a substitute for cocaine. The hydrochloride is soluble in water, to the extent of 6 per cent.; it is less toxic than cocaine, though its anæsthetic effect is as great. While cocaine produces local anæmia, eucaine produces local hyperæmia; when applied to the cornea, eucaine does not cause desquamation of the superficial epithelium as cocaine does, nor does it affect the pupil or accommodation. A one per cent. solution applied to the eye causes no pain (*Revue de Thérap.*, June 15, 1896).

Formalin Gelatin. Schroder prepares this compound by adding to a warm solution of gelatin in an equal quantity of water, 2 per cent. of formalin, while stirring the liquid. A thick mass is thus formed, which is turned into a basin, covered with formalin and left for some time. After being powdered the product is well washed with water and dried (*Pharm. Zeitung*, 1896, No. 56).

Malt Extract. W. A. Washburn seems to have confirmed Prof. Reynolds Green's statement that sunlight exercises a destructive effect upon diastase (*Ph. J.* [3], xxv., 355), for he finds that malt extract prepared without access of white light, and with the proper menstruum, is vastly superior as regards diastasic power to extracts prepared in the light, whatever menstruum be employed in the latter case. A satisfactory menstruum consists of alcohol, two parts glycerin, four parts, and water ten parts. The malt is moistened packed in the percolator, and percolated as rapidly as possible, in a room supplied with red light only. The product, 200 C.c. of which contains the soluble constituents of 100 Gm. of malt, has a pale amber colour, and if kept in the dark will retain its diastasic power indefinitely. It should convert about eighteen times its own weight of starch, and when carefully concentrated to the semi-solid condition about ninety times its own weight (*New England Druggist*, viii., 489).

Examination of Powdered Gamboge. E. G. Eberhardt notes that the U.S.P. test for starch in gamboge—in which the substance is boiled with water, the liquid cooled, and no green coloration should be observed on adding iodine if the gamboge is pure—is sufficiently delicate to disclose the presence of considerably less than one per cent. of starch, but "although good pipe gamboge will generally meet this requirement, an experience extending over several years has failed to discover a powdered gum that would do the same," one per cent. or less of starch being invariably present in the latter. Whatever the origin of this starch may be, the proportion in which it is present renders it an absurdity to term it an adulteration, and it is suggested that if the official test is to be retained it should be capable of distinguishing between traces of starch and appreciable quantities. Further, it is recommended that 75 to 80 per cent. of gamboge should be required to be soluble in alcohol (*Am. J. Ph.*, lxviii., 371).

Tincture of Opium. According to L. F. Kebler, tincture of opium should be prepared from the granulated drug, 30 per cent. of which should be packed in a percolator in the usual manner, enough menstruum added to cover the whole of the drug, and the remainder of the latter then dropped in. Percolation is allowed to proceed until 10 per cent. of percolate has been obtained, the opium being always covered with the menstruum: the lower orifice of the percolator is then closed and the drug allowed to macerate for three hours. Next, continue percolation until another 10 per cent. of finished product has been secured, then macerate again, and let the processes alternate until exhaustion is complete (*Am. Journ. Pharm.*, lxviii., 406).

Standardisation of Solid Extracts.

C. H. La Wall comments upon the comparative lack of improvement in solid extracts during late years, and the continued want of uniformity existing in the case of those preparations. The pharmacist of to-day, he points out, is uncertain when taking down a jar containing solid extract whether he will be able to pour out the required quantity, or whether it will be necessary to use a hammer and chisel to get it out. The vague definition "pilular consistence" is, of course, a main cause of the difficulty experienced, but the lack of uniformity in strength of the extract, as compared with the drug itself, is more important. It is suggested, therefore, that convenient and appropriate standards should be adopted for the solid extracts of such drugs as have principles which are easily determined, and that the addition of 4 or 5 per cent. of glycerin to the nearly finished extract would obviate any but slight alteration in consistence, even when the preparation is kept for several years, so long as it is kept tightly covered. The extracts to which it is suggested the principle of standardisation might easily be applied are those of aconite root, belladonna leaves (alcoholic), cinchona, colchicum root, conium, hyoscyamus, physostigma, and stramonium seed, in addition to nux vomica and opium for which standards have already been adopted (*Am. Journ. Pham.*, lxviii., 366).

Strophanthus Preparations.

Drs. H. C. Wood and W. S. Carter have conducted experiments on mammals to test the activity of the best commercial strophanthin and of an extract of strophanthus. The latter was made by Dr. Charles Rice by evaporating the tincture, and each gramme corresponded to 4·127 grammes of strophanthus seed, or to 82·5 C.c. of the U.S.P. tincture. It was proved to be an active preparation, and it is recommended that it should be made official, one-eighth or one-fourth of a grain to represent 5 minims of the tincture. Commercial strophanthin was also found to be extremely active and a superior preparation of the drug. Its inclusion in the U.S.P. is therefore suggested, with appropriate tests for its purity (*Am. Journ. Pharm.*, lxviii., 353).

A New Insecticide.

A substance recommended as a substitute for Paris green in spraying mixtures for destroying insects on plants, and alleged to be non-injurious to foliage, has been found by F. T. Shutt to consist of lead arsenate. The insecticide is prepared by dissolving 3 ounces of sodium arsenate in a quart of water, and 4¾ ounces of lead acetate in a similar quantity of water, then pouring both solutions into a barrel containing about 45 gallons of water and stirring well. The volume may then be made up to 50 gallons. The white amorphous lead arsenate formed remains longer in suspension when thus precipitated in a large volume of water than when concentrated solutions are mixed and subsequently diluted. A slight excess of lead acetate remains in solution, thus preventing risk of injury to foliage that might result if sodium arsenate were in excess.

Another Arrow Poison.

C. Gärtner has arrived at the conclusion that the arrow poison obtained by the natives of the Philippine Islands from the bark of the "abuhab" tree (*Rabalaisia philippinensis*) resembles "dajaksch" used in Borneo, and "upas autiar," since it owes its fatal action to a direct effect on the ganglia of the heart. The poison is extracted from the bark by means of water, and the solution used in the experiments contained in 10 C.c. the extractive from one gramme. The hypodermic injection of 0·1 C.c. of this fluid was fatal to frogs; a dose of 0·3 C.c. caused death in fifty-six minutes; and when 0·5 C.c. was administered, death of the heart took place in eight minutes, whereas breathing, muscular reaction to mechanical irritation, and voluntary muscular movements continued for some time. The minimum fatal dose, when administered hypodermically to rabbits, was found to be 0·4 C.c. per kilogramme of body weight (*Pharm. Review*, xiv., 164).

Chinese Opium.

The Consular Report on the trade of Amoy for 1895 shows that there has been a great increase in the quantity of opium produced at Tung Wei and Yung Ch'un, as compared with the previous two years, but Ma Hsiang, Kuan K'ou, and An Hsi have failed to supply as much as usual:—

District.	Quantity.	Value.
Tung Wei	533,333 lbs.	£208,333.
Ma Hsiang, Kuan K'ou, An Hsi	40,000 lbs.	£15,625.
Yung Ch'un	53,333 lbs.	£13,021.

The greater part of this native opium is generally sent up into the interior, to Chung Chou, Shih Ma, and other places. The quality of the drug remains unaltered, but its use, nevertheless, increases. The consumption of Szechuen opium at Amoy has also increased, about 80,000 lbs., valued at 8*s.* per lb., having arrived during the year. About 40,000 lbs. of Yünnan opium, valued at 9*s.* per lb., was also imported, whilst it is stated that about 400,000 to 540,000 lbs. of Szechuen and 130,000 to 160,000 of Yünnan opium were clandestinely brought overland through Ch'üan Chou. As in other districts, Chinese opium is gradually ousting the Indian drug.

Saffron in Spain.

The British Consul at Malaga is informed that the price of saffron seed varies in proportion to the price of saffron itself. The ground is lightly prepared in August to a depth of 15 Cm., the seed planted about 8 Cm. deep, in rows 20 Cm. apart, with 1 or 2 Cm. between the seeds. There is no fruit until the second year, and after the sixth year it is customary to renew the plantation. Gentle hoeing is necessary in summer, and the soil must be loosened with a special tool before the plants are moved at the end of September. Soil in which the plant grows for the first time gives the best result, and the richer the soil the better the return. The flower is picked during the latter half of the month of October, and the product, after drying on sieves over a slow fire, is divided into nine classes, the prices of which vary according to the quantity of each class that the crop yields and the demand for the same.

Proteids of the Potato.

T. B. Osborne and G. F. Campbell have ascertained that the proteids of the potato tuber consist of a globulin, for which they propose the name "tuberin," and a proteose occurring in very small amount. Tuberin is precipitated by saturating its solutions with sodium chloride or sulphate, magnesium sulphate, or ammonium sulphate. Acetic acid or nitric acid gives a precipitate readily soluble in excess of acid, even in the presence of salts. Potassium ferrocyanide gives no precipitate in the absence of acetic acid; mercuric chloride gives none, but picric acid or tannic acid throws down the globulin. The usual reactions are given with the biuret, Millon's, and the xanthoproteic tests. Since tuberin is soluble in very dilute saline solutions, the greater portion of this proteid is found in the juice of the potato. It is precipitated slowly and incompletely by dialysis, because of the difficulty of removing all soluble salts by this process, and like other easily soluble globulins it readily changes to the insoluble modifications, so that preparations made by dialysis are, to a great extent, insoluble in saline solutions. In contact with alcohol, tuberin very quickly loses its

solubility, and when dissolved in 10 per cent. sodium chloride solution it shows a somewhat variable heat-coagulation point, depending on the conditions under which it is tested. Generally, a flocculent coagulum is formed on heating to 60°–65° C., but coagulation is not complete until the solutions have been heated for some time at 80° C. The composition of the globulin is carbon, 53·61 per cent.; hydrogen, 6·85; nitrogen, 16·24; sulphur, 1·25; oxygen, 22·05 (*Journ. Am. Chem. Soc.*, xviii., 575).

Proteids of the Pea and Vetch.

Osborne and Campbell have also investigated the proteids of peas and vetches, which they find to be the same in both cases, and almost entirely soluble in 10 per cent. sodium chloride solution. The chief is a globulin, the "legumin" of Braconnot, which is readily precipitated by dialysing its salt solutions. It is freely soluble in 5 per cent. solutions of sodium chloride, but dilution of strong solutions with water causes precipitation. The legumin from the pea is partly coagulated by heating strong solutions in a boiling water-bath, and sets to a firm jelly after thus heating for a time, whilst that from the vetch is not coagulated by heat nor even rendered turbid by prolonged boiling of strong solutions. These differences, however, are attributed to substances with which the proteid is associated in the two seeds. Another proteid—either an albumin or a globulin—is present in small amount in both plants, together with a very little proteose (*Journ. Am. Chem. Soc.*, xviii., 583).

Conglutin and Vitellin.

The same observers find that at least six perfectly distinct proteids have been confounded together under the name vitellin or conglutin. The first discovered was the proteid found in the seed of the almond by Proust and named by him "amandin." This is identical with the globulin found in peach kernels, and it is proposed to restore the old name for it. Then there is "edestin," found in the seeds of hemp, castor bean, squash, flax, cotton, wheat, rye barley, maize, and coco-nut; "corylin," found in the walnut and filbert; "excelsin" in the Brazil-nut; "avenalin" in the oat; and "conglutin" proper in the lupin. The sunflower seed probably contains edestin (*Journ. Am. Chem. Soc.*, xviii., 609).

Denaturation of Alcohol.

The increasing use of incandescent burners which have been successfully used with spirit lamps as well as with gas, has led to inquiries for some more satisfactory method of denaturing alcohol than those now in general use. G. Jacquemin thinks he has found a suitable substance for the purpose in an oil (*l'huile sulfurée indifférente de Zeiss*) prepared by the distillation of concentrated solutions of barium sulphovinate and sulphide. This oil—the trihydrate of ethyl-sulphydrate—is not precipitated by any reagent, and since the crude substance, mixed with one-eleventh part of mercaptan, boils at 70° to 102°, it meets the essential requirement of a denaturing agent, as alcohol to which it is added cannot be purified by fractional distillation. Five grammes of the oil suffices to render a hectolitre of alcohol unfit for consumption as a beverage, and yet does not make it unfit to burn or diminish the illuminating power of the alcohol (*Comp. rend.*, cxxii., 1502).

Röntgen Rays in Tuberculosis.

Lortet and Genoud have obtained important results by the application of the Röntgen rays in cases of tuberculosis; guinea-pigs being the subjects of the experiments. Eight of those animals were inoculated with the disease on April 23, and two days later three of them were subjected to the action of the rays, the operation being subsequently repeated every day for about an hour until June 18. The five guinea-pigs in which the disease was permitted to run its natural course unchecked were examined on June 9, and found to have abscesses in the neighbourhood of the point where inoculation was effected, and on June 18 their condition was still worse. No trace of such symptoms, however, could be detected in the three animals subjected to the new treatment, and the authors feel confident that the development of the disease had been in some way modified in their case by the action of the *x*-rays (*Comp. rend.*, cxxii., 1511).

Cocaine in Microscopy.

A novel application of this anæsthetic, which will probably prove useful to those microscopists who desire to mount permanent slides of active rotifers or contracting animals such as the Bryozoa, is described by Cooner, who treats Bryozoa as follows:—Several colonies are placed in a watch glass with 5 C.c. of water, and as soon as the animals are expanded, one or two centigrammes of cocaine hydrochlorate is dropped on the edge of the water at distant points. In fifteen minutes the narcotic influence is sufficient, as may be tested by touching the tentacles with a needle. One per cent. chromic acid is now poured in to fill the glass, and left for half an hour, then poured off and water substituted. The preparation is next put through alcohols of varying strength and hardened in the usual way, oil of lavender being recommended for clearing. The Melicertas are very resistant to this method, and require a much stronger dose of cocaine, so that killing cannot be done with chromic acid, since the mineral acid precipitates chromate of the alkaloid from very strong solutions. A 20 per cent. solution of formalin is therefore substituted (*Amer. Month. Micro. Journ.*, xvii., 95).

Extraction of Caffeine.

Based on the well-known fact, discovered in 1881 by Tanret, that certain organic salts, such as salicylates and benzoates, act as solvents upon caffeine, Georges has proposed to employ a one per cent. solution of sodium salicylate for the extraction of that alkaloid from tea and coffee. Five grammes of the finely powdered sample is mixed with fine sand, and exhausted by percolation with a one per cent. solution of sodium salicylate until a colourless liquid is obtained. The percolate is then evaporated to about 50 C.c., and extracted four successive times with chloroform; this solvent is finally distilled off, leaving the alkaloid in a pure white state for weighing (*Journ. de Pharm.* [6], iv., 58).

Perfumed Fumigating Papers.

The paper to be used, whatever the perfume afterwards employed may be, is first converted into "touch paper" by immersing it in a cold saturated solution of potassium nitrate, and drying on strings. Unsized paper, such as ordinary filter paper should be used. It is perfumed by dipping into any of the following essences and again drying:—*Papier d'Armenie* (No. 1): Musk, 10 otto of rose, 1; benzoin, 100; myrrh, 12; powdered orris root, 250; strong spirit of wine (64 per cent.), 300 parts by weight. (No. 2): Benzoin, 80; balsam of Tolu, 20; storax, 20; yellow santal wood, 20; myrrh, 10; cascarilla, 20; musk, 1; alcohol (64 per cent.), 200 parts by weight. *Papier d'Orient* (No. 1): Oil of cloves, 30; oil of cinnamon, 36; oil of Bergamot, 48; oil of lavender 48; simple tincture of benzoin, 420 parts, by weight. (No. 2): Balsam of Peru, 15; oil of cloves, 30; oil of bergamot, 30; acetic ether, 36; essence of musk, 6; essence of vanilla, 60; tincture of benzoin, 160; tincture of cedarwood, 30. Other aromatic combinations may be made on similar lines (*Journ. de Pharm.* [6], iv., 77, after *Rev. de Chim. indust.*).

Eucasin.

This is a preparation similar to nutrose (see p. 63), consisting either of an ammonia compound of casein or of a compound of casein with hydrochloric acid. Its preparation has been patented by E. Salkowsky and W. Majert.

THE GENERAL FEATURES OF PHARMACOPŒIAS.*

BY OSCAR OLDBERG.

(*Concluded from page* 50.)

Descriptions.—Good descriptions of drugs and chemicals are more easily made than descriptions of galenicals. Hence we find the descriptions of galenical preparations omitted from the American, the British, and several other Pharmacopœias, where the descriptions of crude drugs and chemicals are exceptionally careful and elaborate. But the German, Scandinavian, and several other Pharmacopœias do at least something in the way of describing individual tinctures and other official preparations.

The Danish Pharmacopœia says that in all descriptions of the colour of liquids, the colour mentioned should be understood to be that seen in a body of liquid of two centimetres diameter, by transmitted light. This statement is an unusually precise one, deserving of imitation.

General Paragraphs Descriptive of Preparations.—Many pharmacopœias, as those of Germany, France, Switzerland, Holland, the Scandinavian countries, etc., contain separate articles under the generic titles of whole classes of pharmaceutical preparations, which paragraphs define their titles and give a general description of the class, together with general directions as to the methods of preparing them. Such general descriptive paragraphs referring to galenical preparations are not given in the American and British Pharmacopœias, except that the U.S. Pharmacopœia does say something about decoctions, infusions, triturations, and suppositories.

In a few pharmacopœias there are also general articles on fixed oils, volatile oils, and other classes of substances which are not galenical preparations.

But in some cases the pharmacopœias are rather inconsistent in these directions. Thus the German Pharmacopœia tells us what pills are and how to make them, but says nothing in regard to the manner of making compound powders; the Pharmacopœia of the Netherlands, on the other hand, has an article on powders, but none on pills; the Danish and Norwegian Pharmacopœias have general articles on volatile oils, but none on fixed oils; etc.

As examples of these general articles may be mentioned the following:—

Under the generic title of "Decoctions" the German Pharmacopœia says, among other things, that these preparations shall be made of 10 per cent. strength unless otherwise directed, except that decoctions of drugs for which the maximum doses are defined in that work must be made so that the doses of the decoctions come within the limits of the table of maximum doses, and must not be dispensed at all unless the physician specifies the strength; mucilaginous decoctions may be made of such strength as the apothecary thinks best. The general formula orders that the drug be covered with cold water, and the vessel then placed on the water bath and there exposed to the heat from the steam of the boiling water for one-half hour, with occasional stirring, the decoction to be strained while still warm. Two very curious exceptions are then mentioned in that it is said the "decoctions" of althæa and of flax-seed must be made by steeping the drugs in cold water for half an hour without stirring, after which the maceratum is to be passed through the strainer without much pressure; so made, these preparations are, of course, not decoctions.

The article on pills in the Danish Pharmacopœia says: "Pills are remedies of a spherical or oval form. Unless otherwise directed they are to be prepared as follows: The solid ingredients prescribed must be previously powdered and well mixed in a suitable mortar, and the other ingredients afterwards carefully incorporated so as to produce a uniform mass. Whenever the ingredients prescribed do not form a good mass without additions, the apothecary may add water, alcohol, glycerin, glycerite of starch, extract of liquorice, liquorice root, sugar, tragacanth, Irish moss, or kaolin, provided, however, that the number of pills prescribed shall not be changed. The apothecary must make a note on the prescription mentioning the excipient or excipients added by him. When necessary and not otherwise prescribed, the pills are to be dusted with lycopodium. In making pills of substances which are easily decomposed, as for example silver nitrate, mercuric chloride, or potassium permanganate, the mass is to be made with kaolin and water unless otherwise prescribed. Pills containing ingredients which are volatile or hygroscopic must be dispensed in tightly-closed glass containers.

Preservation of Medicines.—Many pharmacopœias give directions concerning the preservation of crude drugs as well as other medicines.

The Pharmacopœia of the Netherlands says that medicinal substances liable to be injured by contact with air or by light or moisture must be kept in tightly-closed containers in a dark place. Volatile substances must be kept in containers of glass or metal, and special precautions are mentioned for the preservation of hygroscopic substances.

The Danish Pharmacopœia adds that when volatile or hygroscopic substances are prescribed in powders, each powder must be put in paraffined paper.

The Swiss Pharmacopœia states that in all cases where substances must be "protected against light," the "light" referred to is understood to be direct sunlight.

Tests.—The Pharmacopœias of Germany and Switzerland contain explicit directions as to the purity of reagents, the diameter of test-tubes to be used in purity tests, and the quantity of test solution used. The German Pharmacopœia directs that the test glasses shall be of 20 millimetres diameter, and that, unless otherwise prescribed, 10 C. c. of test-solution shall be used for each test. The Swiss Pharmacopœia orders that the test-tubes shall be of from 15 to 20 millimetres diameter.

Nomenclature.—Nearly all pharmacopœias employ a latinic nomenclature throughout, and as the titles are also arranged in alphabetical order, it follows that the incidental classification of the official remedies is governed by the style of these titles. But in the French 'Codex' the latinic titles are frequently omitted, and wherever given they are made subordinate to the French names, the alphabetical arrangement within each of the four separate lists of pharmaceutical and medicinal substances (drugs, chemicals, galenicals, and veterinary remedies) being accordingly different from that which would result from an alphabetical sequence were the headings to consist of latinic titles.

A majority of the pharmacopœias make the latinic titles of plant drugs consist of two words, one the botanical name of the plant, and the other naming the plant organ constituting the drug, as Radix Gentianæ, Semen Myristicæ, Cortex Cinchonæ, Folia Sennæ, Flores Arnicæ, etc., while other pharmacopœias, including that of the United States, employ such titles as gentiana, myristica, cinchona, and senna, and name the plant organ only in cases where more than one organ of the same plant is official, as in arnica.

The titles given to plant drugs in the language of the text or of the country are sometimes systematic or technical, at least preferably if not uniformly, while in other pharmacopœias they are simply the popular names. Neither of these plans is consistently carried out to the fullest extent practicable. In the Pharmacopœia of the United States the non-latinic titles are generally technical and systematic; thus we say digitalis instead of "foxglove," cap-

* Reprinted from the *Bulletin of Pharmacy*

sicum instead of "red pepper," cantharides instead of "Spanish flies," podophyllum instead of "mandrake" or "May-apple root." But we also say "garlic" instead of allium, "black haw" instead of *Viburnum prunifolium*, "elm" instead of ulmus, and "pomegranate" instead of granatum. The British Pharmacopœia, on the other hand, uses such English titles as "dill fruit" instead of anethum, "chamomile flowers" instead of anthemis, "horse-radish root" instead of armoracia, "squirting cucumber fruit" instead of ecballium, "yellow jasmine" instead of gelsemium, "henbane" for hyoscyamus, "dandelion" for taraxacum, "foxglove" for digitalis, and "bearberry" for uva ursi; but it also says belladonna instead of "deadly night-shade," podophyllum instead of "mandrake," frangula instead of "buckthorn," etc.

The German Pharmacopœia uses such names as Eibischwurzel instead of Althæa, Brechwurzel for Ipecacuanha, Sennesblätter for Senna, Meerzwiebel for Scilla, Zeitlosensamen for Colchicum, etc.

The latinic titles of the chemicals follow one of three systems of construction—the English method which gives us such titles as cupri sulphas, plumbi oxidum, and argenti iodidum; the Berzelian system which gives us sulphas cupricus, oxidum plumbicum, and iodidum (or jodetum) argenticum; and the German method which furnishes such titles as cuprum sulfuricum, plumbum oxydatum and argentum iodatum.

The Danish Pharmacopœia directs that all containers in the drug stores shall be provided with plain, easily read latinic labels, and that all new labels placed on such receptacles after the date upon which the new Pharmacopœia went into effect must be in conformity to the official nomenclature. The Norwegian Pharmacopœia also contains a similar requirement, and adds the further regulation that all containers for poisonous substances must have labels with red lettering, while the rest must have labels with black letters.

General Rules.—All pharmacopœias contain introductory articles called "Præcepta Generalia," "Preliminary Notices," or something else. These general rules or directions concern the weights and measures, specific weight, some general processes (such as maceration and digestion), the fineness of powders, tests, etc.

As to weights and measures, the only pharmacopœia in the world which has not yet adopted the metric system is that of Great Britain; but the British Pharmacopœia is now undergoing revision and it has already been definitely decided that the new edition will employ the metric weights and measures to the exclusion of any other units. Whenever any table of equivalents or other references to other weights and measures are made, these refer to the customary units employed in Great Britain and the United States.

The great majority of pharmacopœias construct the working formulæ in relative proportions by weight. They, therefore, contain in the introductory general precepts the statement that the term "part" or "parts" wherever used signifies weight part or weight parts. The British and United States Pharmacopœias are the notable exceptions, the formulæ for all liquid preparations of these two works being expressed volumetrically instead of in terms of "parts by weight."

Many pharmacopœias reduce the proportions or quantities in all formulæ to the simplest terms possible, while other pharmacopœias give formulæ adjusted to 10, 100, or 1000 units, so far as practicable. Thus in the German Pharmacopœia the formula for mucilage calls for 1 part of acacia and 2 parts of water, whereas the Pharmacopœia of the United States directs 340 grammes of acacia and enough water to make 1000 cubic centimetres of product.

Several pharmacopœias contain directions governing the size of drops of liquids to be observed in all cases where these are prescribed by drops instead of by weight or volume. The Pharmacopœias of France, Holland and Switzerland also describe the "droppers" suitable for the purpose. It is usually ordered that the dropper used shall be so constructed that twenty drops of water dropped by the instrument shall weigh 1 Gm. The French 'Codex' devotes about three pages to the subject of the size of drops, including a table. It describes the "compte-gouttes normal" as a glass tube with capillary point with an external diameter of exactly 3 millimetres; it is to be such that 20 drops of water at a temperature of 15° C. weigh 1 Gm., and the deviation from this standard must not exceed 0 02 Gm. The Swiss Pharmacopœia does not mention the temperature, but requires that the dropping instrument shall give from 24 to 25 drops to the cubic centimetre.

It is singular that only one pharmacopœia contains specific directions as to the sensitiveness and accuracy of balances. The Pharmacopœia of the Netherlands has this to say: Balances for the smallest quantities must never be loaded to carry more than 50 grammes; the balance for grammes should not carry loads exceeding 250 grammes; and the third or largest balance should be one adapted to carry loads not exceeding 1000 grammes. The finest or most sensitive balance should be such that when the pans are not loaded the tongue shall be stationary, pointing to the centre of the dial, and deviating from the centre by at least two millimetres upon depositing one milligramme on one pan; when this balance is loaded the tongue should deviate from the centre of the dial at least two millimetres upon the addition of five milligrammes to the load on one pan.

The second balance is sensitive enough if, when not loaded, it responds in the same manner (the tongue deviating two millimetres from the centre of the dial) when a weight of 20 milligrammes is placed on one pan, and if, when loaded, it responds to 50 milligrammes.

The third balance must be sensitive to 50 milligrammes when not loaded, and to 200 milligrammes when loaded.

The balances are regarded as accurate if the point of the needle coincides with the centre of the dial when the lever is at rest, whether the pans be not loaded or carrying equal loads, and when the loads are transposed. But nothing is said about the accuracy of the weights, probably because the laws of the Netherlands are explicit enough on the subject of the tolerance. The only country in the world which has no laws on such an important matter is our own United States.

In reference to specific weights there are more or less explicit rules given in all pharmacopœias. The German Pharmacopœia states that its specific weights are to be understood to refer to the standard temperature of 15° C. for the substances compared with water as unit, but it is silent as to the temperature of the water. The pharmacopœias of Switzerland and Holland state the specific weights of liquids at 15° C. referred to water at 4° C. The pharmacopœias of the United States, Denmark, and Norway express specific weights at 15° C., in terms of the density of water at the same temperature (15° C.). The British Pharmacopœia simply says that "specific gravities are to be taken at 60° F."

The United States Pharmacopœia alone recommends particular instruments for the determination of specific weights. It recommends the "specific gravity bottle" (instead of the more reliable Mohr-Westphal balance), except for alcohol and mixtures of alcohol and water for which the hydrometer prescribed by the United States Government for the use of the officers of the revenue service is recommended as preferable. [The hydrometers used by our customs and internal-revenue officers are made by an instrument-maker in New York in sets of five each, and are not the alcoholometers formerly employed by said officers. This fact has probably escaped attention.]

The Comminution of Drugs.—Directions governing the comminution of drugs and definitions of the terms employed to express the

relative fineness of powders are generally contained in all pharmacopœias; but in some cases these directions are very explicit, extending to the material and construction of the various sieves to be used, while other pharmacopœias are comparatively careless. But the French Pharmacopœia, loose as it is in most things, prescribes the specific degree of fineness for a large number of individual powdered drugs, which is unfortunately not the rule in other pharmacopœias. The calibre of the wire used in metal sieves should always be prescribed in connection with the number of meshes to the square centimetre; but this precaution is omitted.

Processes of Extraction.—Maceration, digestion and percolation are described or defined in several pharmacopœias. The German Pharmacopœia fixes the temperature of maceration at from 15° to 20° C., and digestion at from 35° to 40°. The Swiss Pharmacopœia prescribes 15° to 25° C. for maceration and 40° to 50° C. for digestion. Other pharmacopœias prescribe 15° to 20° or 25° C. for maceration, and 35° to 45° C. for digestion. That of Holland prescribes a temperature of 90° to 98° C. for the process of infusion. Common sense prescribes any temperature from 15° C. to the highest degree of summer heat for maceration, and any temperature so high as to require the application of heating apparatus but not above 60° C. for digestion, from 60° to 98° C. for infusion, and 100° C. for decoction.

Obedience to Official Directions.—The German Pharmacopœia says that in the preparation of extracts, species, ointments, tinctures, etc., the general directions given under the generic titles or headings under which the various classes of preparations are placed, must be observed. The Danish and Norwegian pharmacopœias declare that every drug store must be provided with all the apparatus, etc., required for the preparation, preservation and examination of the official medicinal substances in accordance with the pharmacopœial directions, and that in the preparation of all medicines the directions of the Pharmacopœia must be followed in every detail, no deviation being permitted by which the product may be caused to have a different colour, odour, taste, or strength. The Danish Pharmacopœia further says that the apothecary is held responsible for the remedies dispensed in his store, and must see to it that they are in accordance with the official requirements. The Norwegian Pharmacopœia not only prescribes that all official remedies must conform to the pharmacopœial requirements, but it contains the rather curious proviso that all preparations for which working formulæ are given must be prepared in the pharmacies of Norway.

As to Dispensing.—In Denmark the Pharmacopœia directs that all remedies must be dispensed by weight—never by volume unless expressly so prescribed. It also directs that all volatile substances and substances which are hygroscopic or are altered by contact with the air must be dispensed in tightly closed glass vessels; but whenever such substances are prescribed to be dispensed in the form of powders, each powder must be put in paraffined paper, and that such powders need not be dispensed in glass containers unless expressly prescribed. Remedies for internal use must be dispensed with white labels; those for external use with blue labels.

Doses.—Tables of maximum single and daily doses are given in nearly all pharmacopœias.

BISMUTH AND CALUMBA IN ACUTE DIARRHŒA OF INFANTS.—A small teaspoonful of the following mixture given every two hours will, according to the *Journ. de Méd. de Paris*, stop vomiting after the first or second dose, and the diarrhœa in the course of twenty-four hours:—Calumba root, 15 grains; boiling distilled water, 3 ounces; infuse, strain, and add subnitrate of bismuth, 45 grains; syrup of orange-flower, half an ounce.

PHARMACEUTICAL SOCIETY

EXAMINATIONS IN EDINBURGH,

July, 1896.

MINOR EXAMINATION—PASS LIST.

Candidates examined	185
„ failed	124
„ passed	61

Aspinall, Thomas.
Atkins, William.
Beattie, Alexander Gordon.
Bentley, Charles Saville.
Black, William Reynolds.
Boyle, Joseph.
Bradshaw, James Ernest.
Burns, John.
Butler, Richard.
Coates, Harold Kinsella.
Crampton, Walter.
Crawford, George.
Davies, Richard.
Davison, John Lyle.
Dewar, John William.
Dixon, Charles Robert.
Emett, Thomas.
Ewart, Samuel.
Fish, William Sadler.
Fletcher, Herbert Parker.
Forrester, Alexr. Harrow.
Gordon, Richard Munro.
Harby, William.
Henderson, Andrew W.
Henderson, William.
Hitchon, Charles.
Holdsworth, Fredk. Herbert.
Hollingworth, Joseph Henry.
Holt, Henry.
Holton, John Charles.
Hughes, William Griffiths.
Johnson, James Cairns.
Lyle, James Alexander.
McLaren, James Bryce.
MacLennan, Roderick.
Mallaband, William Henry.
Marlor, Thomas.
Melville, David Gordon.
Mennie, Donald.
Moore, William Arthur.
Newcombe, Thomas.
Pae, Archibald Thomas.
Page, Henry Skikelthorp.
Peace, Ira.
Robertson, George Farrie.
Rutherford, Thomas.
Schofield, Harry.
Simmons, Edward Harry.
Simpson, Bertram.
Sloan, James.
Stewart, Alexr. McIntosh.
Strong, Alfred Ernest.
Taylor, John Ratcliffe.
Thomas, Lewis Edwin.
Thomson, Thomas.
Toy, Hubert George.
Wallace, Alexr. Profeit.
Wallace, Hugh Gray.
Watt, Marshall Keith.
Westland, Robert.
Woodward, Harrison.

SCHOOL OF PHARMACY PRIZE EXAMINATION QUESTIONS.

MATERIA MEDICA.

PROFESSOR HENRY G. GREENISH.

Thursday, July 16, 1896.—10 *a.m. to* 1 *p.m.*

1. Upon what data is the purity of fixed oils usually judged? How are these data ascertained? Draw illustrations from the official fixed oils.

2. Give concisely processes for the isolation of

(*a*) Eserine and (*b*) ergotinine.

3. Give concisely a process for the determination of the strychnine in nux vomica.

4. Discuss the desirability of introducing processes for the assay of vegetable drugs into the Pharmacopœia. What conditions should, in your opinion, be fulfilled before such processes can be considered reliable? Illustrate your arguments by examples.

MATERIA MEDICA.

PROFESSOR HENRY G. GREENISH.

Thursday, July 16, 1896.—2 *to* 5 *p.m.*

1. Make a preparation of the Buchu leaf given you, showing the mucilage *in situ*. Sketch a portion of your preparation to indicate exactly the localisation of the mucilage. Leave the preparation, suitably mounted, for inspection.

2. Ascertain the nature of the sclerenchymatous elements in the Cuprea bark supplied to you. Illustrate your description by a sketch.

3. Make a transverse section of the Hemidesmus root given you. Examine and describe the cortex only. Draw attention to any cell, cell-contents, or tissues that you consider may possess diagnostic value. Append to your description a list of reagents used, together with the object and result of each test.

PRACTICAL CHEMISTRY.

PROFESSOR ATTFIELD.

Friday, July 17, 1896.—10.0 *a.m. to* 1 *p.m., and* 2.0 *to* 5.0 *p.m.*

1. Qualitatively analyse "The Saline Medicine," and write down the names of the compounds present.
2. What two organic substances are present in "The Solution"?
3. How much bicarbonate of sodium per fluid ounce is present in "The Draught"?

ORGANIC CHEMISTRY.

PROFESSOR DUNSTAN.

Monday, July 20, 1896.—10 *a.m. to* 1 *p.m.*

1. Explain and illustrate the meaning of the following terms:—isomerism, polymerism, symmetrical, reduction, hydrolysis.
2. How is it proved that sarcolactic acid is a constituent of ordinary lactic acid? What form of lactic acid would be produced by chemical means from propionic acid?
3. What is the experimental proof, synthetical and analytical, that salicylic acid is ortho-hydroxy-benzoic acid?
4. Write a brief account of the preparation and properties of the following compounds:—pyridine, piperidine, urea, and aniline.

INORGANIC CHEMISTRY AND PHYSICS.

PROFESSOR DUNSTAN.

Monday, July 20, 1896.—2 *to* 5 *p.m.*

1. Give two methods of determining the focal length of a concave lens.
What is the focal length of a lens, composed of a convex lens of two inches focal length, cemented to a concave lens of nine inches focal length?
2. Give an account of the various measurements required in order to determine the magnitude of all the components of the Earth's magnetic force.
3. What do you know of the scientific discoveries of Berzelius, Cavendish, Priestley, Stas, and Mendelèef?
4. Starting with chrome iron ore, how would you prepare the following compounds?—Chromium trioxide, Chromic anhydride, and Chromic chloride.

BOTANY.

PROFESSOR REYNOLDS GREEN.

Tuesday, July 21, 1896.—10 *a.m. to* 1 *p.m.*

[*Only three Questions to be answered.*]

1. Describe the structure of the stem of Equisetum, and give a sketch of the life history of the plant.
2. Describe some of the peculiar properties by which a plant adapts itself to changes in its environment.
3. Draw the floral diagram which is generally met with in the following Natural Orders:—Malvaceæ, Violaceæ, Umbelliferæ, Gentianaceæ, Orchidaceæ, Graminaceæ.
4. Describe three types of monostelic stems, and point out in what plants they occur respectively.

PRACTICAL BOTANY.

PROFESSOR REYNOLDS GREEN.

Tuesday, July 21, 1896.—2 *to* 5 *p.m.*

1. Make not more than three microscopic preparations to illustrate the mode of formation of bark. Mount them in glycerine. Sketch your preparations and say what each indicates.
2. Refer the specimens A, B, C, D to their places in the natural system of classification, giving your reasons.
3. Identify and briefly describe the three microscopic preparations E, F, G.

THEORY AND PRACTICE OF PHARMACY.

MR. INCE.

Wednesday, July 22, 1896.—10 *a.m. to* 1 *p.m.*

1. Note precautions in dispensing Belladonna preparations; also those of Borax, Myrrh, and the Perchlorides of Iron and Mercury.
2. Describe the official method of preparing the following tinctures, and state maximum dose:—

Compound Camphor, Digitalis, Kino, Opium, and Strophanthus.

3. Illustrate by examples the relative value of Percolation and Maceration, giving instances in which either process is specially advantageous.
4. Translate into uncontracted technical Latin the following sentence:—Macerate for forty-eight hours with frequent agitation; strain the liquor and evaporate over the water-bath to a pilular consistence at a temperature not exceeding 65° to 75° C.

REVIEWS AND NOTICES OF BOOKS.

CHEMICAL NOTES AND EQUATIONS, INORGANIC AND ORGANIC. By G. H. GEMMELL, F.I.C., F.C.S. Pp. 244. Price 5*s*. London: Baillière, Tindall and Cox. 1896.

These notes have been specially prepared by the author to meet the requirements of students of medicine, and have been arranged to cover the work prescribed for the First Professional Chemistry Examination. It is obvious, therefore, that the book is neither intended nor fitted to serve as a text-book of chemistry, but rather belongs to that class of works the careful and judicious use of which, in conjunction with standard manuals, may save the student much time and purely mechanical labour. Divided into three parts, the author deals in turn with general principles, the elements, and organic bodies. The name of the substance is first given, then its formula, after which its occurrence, preparation, and properties are described, equations being given wherever necessary to explain reactions. The book is handy in shape, conveniently arranged, and is furnished with that most useful accessory—a full index.

THE BIOLOGICAL PROBLEM OF TO-DAY. By PROFESSOR DR. OSCAR HERTWIG. Translated by P. Chalmers Mitchell, M.A. Pp. 148. Price 5*s*. London: William Heinemann, 1896.

Preformation and epigenesis are the subjects here discussed by Professor Hertwig, who presents his readers with the basis of a theory of organic development. As a leading scientific naturalist, the author's name is peculiarly associated with important advances in the knowledge of cells and of embryology, amongst others, to the discovery of the intimate nature of fertilisation—that it consists in the union of the nuclear matter of a cell from the male with the nuclear matter of a cell from the female. His experience has led him to doubt the validity of apparently fundamental parts of Weismann's conception, and in this book he first discusses Weismann's theory of the germ-plasm and doctrine of determinants, then contributes thoughts towards a theory of the development of organisms. The subject is not suitable for discussion in these pages, but readers who are interested in it are recommended to purchase the book and read it for themselves. The translator's introduction serves as a lucid statement of the whole case, and the index and glossary will be found to save much time in looking up the meaning of uncommon terms.

TECHNICAL EDUCATION. By HENRY CORBY, B.A., M.D., M.Ch. Pp. 38. Price 3*d*. Cork: J. Mahony, 36, Cook Street. 1896.

The author, rightly regarding technical education as a national necessity, here states its uses and advantages as they appear to him. A review of the educational systems of Austria, Germany, France, and Switzerland is followed by an account of the comparative neglect of technical education in this country, and the pamphlet concludes with some special pleading on behalf of Ireland from an educational point of view.

BEGINNER'S GUIDE TO PHOTOGRAPHY. By a Fellow of the Chemical Society. Pp. 119. Price 6*d*. London: Perken, Son, and Rayment, 99, Hatton Garden, E.C. 1896.

This useful little guide to the purchase and use of a camera has proved its value by reaching a sixth edition, and can be as cordially recommended as ever. A small book is better than a large one for acquiring the first elementary notions about any subject, and here the explanations are put as simply and clearly as can be desired.

FOOD PRODUCTS ADULTERATION.

REPORT OF THE SELECT COMMITTEE.

Summary of Principal Recommendations.

1. That in districts other than county boroughs, where the local authorities fail to put the Acts in force, the county council should, by their own officers, take samples for the purposes of the Acts.

2. That in connection with the sale of mixed articles it should be obligatory upon the vendor to supply the purchaser with a label setting forth that the article is mixed.

3. That the statement of admixture on labels should be legibly and distinctly printed and so as not to be obscured by other printed matter, and that existing labels should be subject to the proviso mentioned in the concluding paragraph of the section of this Report headed "Labelling and sale of mixed articles."

4. That, subject to the limitations indicated in the report, invoices and equivalent documents should have the force of warranties in the cases of all articles to which the Sale of Food and Drugs Acts apply.

5. That the Commissioners of Customs be authorised to examine and take samples of all food imports at the port of entry with a view to subsequent action, as indicated in the body of the report.

6. That dealers who obtain supplies of foods from abroad should be required to submit to the Customs guarantees of purity given by the foreign vendor, together with evidence that they have taken measures to see that the goods are such as they are guaranteed to be.

7. That retailers should be empowered to refuse to sell an article otherwise than in a manufacturer's unopened labelled tin or packet.

8. That the powers of Section 3 of the Sale of Food and Drugs Act Amendment Act, 1879, as to the taking of samples of milk in transit, should be extended to other articles.

9. That the maximum penalty for refusal to sell a sample to the authorised officer be increased.

10. That the division of the sample after purchase and delivery of a portion to the vendor should be compulsory.

11. That samples should be divided into four instead of three parts, and that one of these parts should be at the disposal of the wholesale dealer.

12. That the provisions of Section 5 of the Margarine Act, 1887, as to the exemption of an employer from penalty in certain cases, and punishment of an assistant, should be extended to offences under the Sale of Food and Drugs Acts.

13. That it should be obligatory upon the magistrates or court to refer articles to the Government Laboratory for analysis when such course is desired by either of the parties to the case.

14. That a defendant who proposes to rely upon the warranty defence should be required to intimate this to the prosecutor within a reasonable time of the service of the summons.

15. That the time allowed for appeal to quarter sessions from decisions of local justices should be extended from three to fourteen days.

16. That any person guilty of a second offence under the Sale of Food and Drugs Acts should be liable to a minimum penalty of £5, and that in respect of the third or subsequent offences under those Acts and the Margarine Act, 1887, the punishment of imprisonment without the option of a fine may be inflicted at the discretion of the magistrates or court.

17. That magistrates should be authorised to make orders, at their discretion, requiring a person convicted of offences under the Acts to publish a notification of his conviction in the public press of the locality where the offence occurred.

18. That the definition of the word "food" as used in the Acts should be amended so as to include expressly all articles intended to enter into or be used in the preparation or flavouring of food.

19. That an authority should be constituted who should act as a court of reference upon scientific and other questions arising under the Acts, and who should be empowered, at their discretion, to prescribe standards and limits of the quality and purity of food.

20. That candidates for appointment as public analysts should be required to produce evidence that they possess the requisite knowledge of analytical chemistry, in the shape of a diploma or certificate given in respect of such knowledge by a recognised school of chemistry, or scientific examining body, and that in the case of candidates other than duly registered medical practitioners specific tests of the requisite knowledge of microscopy and the bearing of adulterations upon health should be prescribed.

21. That the remuneration proposed to be given to a public analyst should be subject to the approval of the central authority.

22. That the artificial colouring of margarine to resemble or imitate butter be prohibited.

23. That the mixing for sale of margarine and butter be prohibited.

BRITISH PHARMACEUTICAL CONFERENCE.

LIVERPOOL MEETING, 1896.

LIST OF PAPERS TO BE COMMUNICATED.

1. "The Composition of Diphtheria Antitoxin Serum," by Gordon Sharp, M.B.
2. "Note on Unguentum Conii, B.P.," by R. Wright and E. H. Farr.
3. "Note on the Strength of Some of the Official Succi," by R. Wright and E. H. Farr.
4. "Note on Potassa Sulphurata, Cotton-Seed Oil, and the Pronunciation of 'Pharmacognosy,'" by W. Elborne, B.A.
5. "The Effect of Solvents on the Analytical Characters of Ginger," by J. F. Liverseege, F.I.C.
6. "Radiography," by Leo Atkinson.
7. "Rennet Essence," by J. A. Forret.
8. "A Safety Pipette," by E. W. Lucas.
9. "Cascarillin," by W. A. H. Naylor, F.I.C., and R. D. Littlefield.
10. "Oil of Japanese Fennel," by J. C. Umney.
11. "The Effects of Climate and Soil on Oils of Peppermint," by J. C. Umney.
12. "Tablet Making at the Dispensing Counter," by Stewart Hardwicke.
13. "Bael Fruit and its Preparations," by A. C. Abraham, F.I.C.
14. "Formaldehyde," by F. C. J. Bird.
15. "White Wine Vinegar," by A. H. Allen, F.I.C.
16. "Condensed Milk," by Alfred H. Allen, F.I.C.
17. "Belladonna Root Powder, Separated Siftings Compared," by R. H. Parker.
18. "Note on Concentrated Hydrobromic Acid," by Charles T. Tyrer.
19. "Note on Acid Hypophosphorous," by Charles T. Tyrer.
20. "Liquor Aurii et Arsenii Bromatis," by R. Wright.
21. "Chinese Opium," by Frank Browne.

PHARMACEUTICAL JOURNAL.

A Weekly Record of Pharmacy and Allied Sciences.

ESTABLISHED 1841.

Circulating in the United Kingdom, France, Germany, Austria, Italy, Russia, Switzerland, Canada, the United States, South America, India, Australasia, South Africa, etc.

Editorial Office: 17, BLOOMSBURY SQUARE, W.C.

Publishing and Advertising Office: 5, SERLE STREET, W.C.

LONDON: SATURDAY, JULY 25, 1896.

ADULTERATION OF FOOD AND DRUGS.

THE report of the Select Committee on Food Products Adulteration has at last been published, and a summary of the principal recommendations of the Committee will be found at page 70 of this week's Journal. It is remarked at the outset that while the evidence shows that the law in relation to food adulteration needs amendment in some important points, there is ground for stating that where the Adulteration Acts have been well administered they have been most beneficial in diminishing adulteration offences. It is claimed also that a close connection exists between the extent of adulteration and the number of articles submitted for analysis in pursuance of the Acts, the proportion of adulterated samples being found to diminish as the number of samples taken relatively to the population increases. The number of samples submitted for analysis from 1877 to 1893 rose from 14,706 to 37,233, whilst during the same period the proportion of those samples found to be adulterated fell from 16·2 per cent. to 12·9, the minimum occurring, however, in 1888, when the percentage was 10·8 only. From these figures it is assumed that the greater liability to detection involved in a vigorous administration of the Acts has served to restrict materially the volume of adulteration offences.

The Committee cannot support the proposal that the labels on mixtures should set forth the several components of the mixtures, as well as the fact of admixture, but thinks that any information on the subject printed on a label should be legible and distinct, and not obscured by other printed matter. It is also satisfied that the wholesale dealer or manufacturer is often responsible for adulteration rather than the retailer, and is disposed to think that the solution of this difficulty may be found in extending the provision as to the giving of warranties by wholesale dealers, and increasing the facilities whereby legal proceeding may be taken against the latter. The opinion that invoices and equivalent documents should have the force of warranties is viewed with favour, subject to limitations in the case of perishable articles. Similarly, expression is given to the view that the public should be encouraged to exercise the powers conferred under Section 12 of the Act of 1875, which entitles private purchasers of an article of food or of a drug to submit such article to the public analyst for analysis. The hardship in the case of traders who have to bear the expense of defending themselves from a charge of which they are found innocent is sympathised with, as is also the suggestion that convicted offenders should be required to publish at their own expense a notice of their conviction in the local newspapers.

The important point of a court of reference, which should be empowered to deal with the subject of prescribing limits and standards of quality and purity, is met by the recommendation that there should be a standing departmental committee, appointed by the Board of Trade, rather than an independent authority for the purposes referred to. As to the *personnel* of such a departmental committee, it is proposed that the principal officer of the Government Laboratory at Somerset House should be *ex-officio* a member, and that nominees of the Local Government Board and Board of Agriculture should be included. Further, the report proceeds, "It would appear desirable that the committee should comprise one or more analysts of repute, together with representatives of the General Medical Council, the Institute of Chemistry, and the Pharmaceutical Society. Other scientists whose services are available, and whose presence on the Committee may be expected to lend weight to its decisions, should find places thereon. Representatives of the trading and manufacturing community should also be included." This court of reference, it is proposed, should be empowered to make such orders as they think proper respecting standards of quality and purity, and such orders should when confirmed by the Secretary of State have the force of law, this method of fixing standards being considered preferable, on the ground of simplicity, to resorting to Acts of Parliament for the purpose. It is hoped moreover that the constitution of the court of reference may do much in the direction of systematising the work devolving upon public analysts under the Acts, whose qualifications, by the way, should in the opinion of the Select Committee, be subjected to a more stringent and specific test than formerly.

In conclusion, it is satisfactory to find that the evidence presented shows "that the Act of 1875 has had excellent results in securing the purity of drugs on sale in the United Kingdom, and that at the present time they are not surpassed in this respect. As in the case of foods analysts experience some difficulty, owing to the absence of a standard in pronouncing an opinion upon a drug the purity of which is questioned. It has been proposed, with a view to the removal of this difficulty, that the British Pharmacopœia should be legally constituted the standard for drugs, and that derivations from such standard should be permitted only upon the production of a prescription of a duly qualified medical practitioner. It has also been suggested that the warranties in respect of drugs supplied by wholesale dealers to retailers should hold good for limited periods only—in the case of decomposable drugs for one month, and in other cases for six months."

RE-DISPENSING OF PRESCRIPTIONS.

FREQUENT mention has recently been made of the undesirable facility which a physician's prescription may afford for obtaining a supply of poison, and there is reason for believing that further attention will be directed to this subject. As an indication that this is likely to be the case, one of the candidates for election to the General Medical Council, as a direct representative of the medical profession —Dr. R. R. RENTOUL, of Liverpool—makes reference to the subject of re-dispensing prescriptions as one of the "leading questions" upon which he considers a statement of his views to be desirable as a means of obtaining support to his candidature. In his address to the registered medical

practitioners of the country, Dr. RENTOUL states that he is "in favour of checking the sale of poisons and other dangerous drugs by chemists by means of the unauthorised re-dispensing of the prescriptions of a practitioner." In the absence of any statement as to the means by which Dr. RENTOUL would propose to provide against the re-dispensing of prescriptions in which poisons are ordered, it is, for the present, sufficient to point out that while the epithet "unauthorised" which he makes use of conveys an imputation upon dispensing chemists, it is not justified by the facts of the case he refers to. We venture to say that no respectable chemist would disregard an intimation upon the face of a prescription that it was to be dispensed only once. In such a case we have very good reason for believing it would be pointed out that the prescriber's authority must first be obtained. So that when Dr. RENTOUL speaks of unauthorised re-dispensing, his remark can only apply to cases in which prescriptions do not bear any indication that they are not to be re-dispensed, therefore the application to such cases of the epithet "unauthorised" has no kind of reasonable justification. It ignores the prevailing popular opinion that when a patient has obtained a prescription from a medical man and paid his fee, the prescription is held to be the property of the patient, who is entitled to do what he pleases with it. That is an opinion which the dispensing chemist is not in a position to dispute, neither is it his business to do so. Even when he is led, by observation or other circumstances, to suspect that improper or undesirable use is being made of a prescription, the difficulty of taking any efficient action for preventing possible mischief is frequently insuperable. The one basis upon which any real good could be done—the physician's limitation of the use of a prescription—is generally wanting. As a consequence of this deficiency the dispensing chemist is not unfrequently perplexed as to the course he should adopt in dealing with such prescriptions as order hypodermic injection of morphine when they are presented to him to be dispensed time after time. We do not pretend to deny that in such cases mischief may not be done, nor should we object to any reasonable proposition for preventing it, but we maintain that the remedy is almost entirely in the hands of prescribers and that, unless the evil complained of be attacked at the root, it will be impossible to prevent it. But failing such an attack, there is, above all, no ground whatever to cast reproach upon dispensing chemists, who do no more than it is their particular business to do in regard to physicians' prescriptions brought to them to be dispensed.

BRITISH MEDICAL ASSOCIATION.

THE report of the Council of the British Medical Association adopted at the meeting on the 8th inst. for presentation at the approaching annual meeting to be held in Carlisle, mentions that Mr. ERNEST HART, who has for so long a series of years filled the onerous position of Chairman of the Parliamentary Bills Committee, has expressed himself as unwilling to be re-elected to that office. The President, Dr. WARD COUSINS, and several other members of the Committee have expressed regret at the prospect of losing the services of Mr. HART in the capacity of Chairman and strongly urged him to re-consider his decision, at least so far as to give the Committee the benefit of his assistance for another year. On the motion of the PRESIDENT a resolution was unanimously passed that the best thanks of the Committee be given to Mr. HART for his past valuable services, with a hope that he would still continue his labours.

ANNOTATIONS.

HYDRASTIS.—The attention of the Therapeutic Committee of the British Medical Association is being directed to the scope of employment of this drug and a preliminary report upon its actions has been prepared. This is to be followed by a clinical investigation of the therapeutic uses of hydrastis, in the prosecution of which the assistance of members of the Association is solicited.

MISUSE OF POTENT DRUGS.—The difficulty of preventing altogether the misuse of narcotics and similar articles is shown very forcibly by the circumstances of a case of chronic cocaine poisoning reported to the *British Medical Journal* by Dr. Zangger, of Zurich, as having been under his care in 1894. An English lady who had been in the habit of taking chloral hydrate to the extent of twenty-five or thirty grains every night, happened to be ordered by a physician to use a lotion containing forty-eight grains of cocaine in two ounces for the relief of sensitive gums, and it proved so effectually soothing that she continued to use it for two years, so copiously that the daily dose of cocaine taken probably amounted to thirty grains. On becoming a patient of Dr. Zangger, means were at once adopted to reduce the quantity of cocaine without the lady's knowledge: in the course of six weeks it was brought down to less than one-third as much as she had been taking. After leaving Zurich the lady resumed her pernicious habit and, though still a living proof of the power of resisting powerful toxic agents, she presents a sad case of a blighted life. Dr. Zangger points to this case as suggesting to his colleagues the necessity of being very careful in giving a prescription for such a drug as cocaine, even for external use, without directing that it should not be dispensed again without authority. He considers this to be all the more necessary since, as he adds, "it seems easy for the public to procure poison in wholesale quantities from wholesale sources," that remark being based on the fact that, in the case referred to by him, the lady "when unable to get her prescription made up as often as she desired," used to procure from a London wholesale druggist an ounce of cocaine at a time, and never failed to have a reserve supply about her in case of need.

CUBIC CENTIMETRE, MILLILITRE, AND FLUIGRAMME.—Whilst all the world is being urged to adopt the metric system of weights and measures for the sake of uniformity, Americans depart from that uniformity by misspelling the names of the metre, litre and gramme, and English-speaking pharmacists generally follow suit by applying the names of the chief measures of capacity to something different. In the latest issue of the *Apothecary*, Dr. Oscar Oldberg, who offends in the first-mentioned respect, calls other pharmacists to account for offending in the second. At present, he says, nearly all pharmacists fail to make any distinction between the gramme and the cubic centimetre, though it is well known that the litre in actual use is not one cubic decimetre but the volume of one kilogramme of water, and the one-thousandth part of the litre should, therefore, be referred to as a millilitre. Again, the instruments and apparatus pharmacists use are not adjusted to the standard temperature of the metric system (4° C.), but to either 15° C. or to 60° F. "The volume of one kilogramme of water in air and at 15° C. is not the volume of one kilogramme of water in vacuo at 4° C., and neither of these volumes is one cubic decimetre." Dr. Oldberg asks, therefore, whether it would not be well to give the volume of one gramme of water in air at any temperature from 15° C. to 22° C. a distinctive designation, and he recommends to the consideration of the British and United States Pharmacopœia authorities the term "fluigramme," which has been suggested for the purpose.

THE INDIGENOUS DRUGS OF INDIA.—There has just been published at Calcutta by Dr. Kanny Lall Dey, Rai Bahadur, C.I.E., a new edition of his work on 'The Indigenous Drugs of India,' in the preparation of which he has been assisted by an Associate of the Society, Mr. William Mair, formerly chemist to the Dundee Royal Infirmary. The book extends to 400 pages, and has been dedicated by the Rai Bahadur to the Pharmaceutical Society, of which he has been an Honorary Member for thirty years, "in recognition of the efforts which the Society has for more than fifty years devoted to the advancement of pharmaceutical and pharmacological knowledge, and as a humble tribute of respect." A preface has been contributed by Dr. George Watt, F.L.S., C.I.E., Reporter on Economic Products to the Government of India, and fifty copies have been ordered by Government.

THE INDIAN DRUGS COMMITTEE.—The Government of India appointed some months ago a committee—consisting of Dr. George King, F.R.S., C.I.E., President; Dr. George Watt, F.L.S., C.I.E., Secretary; Dr. C. J. H. Warden, F.C.S., Medical Store Keeper to Government; Dr. J. F. P. McConnell, Professor of Materia Medica in the Medical College, Calcutta; and Rai Bahadur Kanny Lall Dey, F.C.S., C.I.E.—to consider the question of encouraging the increased use of indigenous drugs in India and the utility of initiating, as a Government measure, experiments to test the reputed therapeutic value of certain indigenous remedies. The proceedings of the Commission have not been made public, but it is understood that it has completed its labours as outlined in the original resolution calling it into existence, and has submitted a report to Government, embodying certain practical recommendations, on the reception of which will depend what course the Commission may take in the future. It is believed that one result of the deliberations of this Commission will be to establish the value of certain indigenous medicinal products that are deserving of better appreciation, both here and elsewhere, rather than the substitution of native drugs for those of European origin, and it is likely that the finding of the Commission in regard to certain approved drugs will be incorporated in a probable future edition of the Pharmacopœia of India, that of 1868 being sadly out of date, not that it ever was an ideal publication of its kind or ever really official. The present edition of the British Pharmacopœia is not altogether suitable as a pharmaceutical standard for India, and it is doubtful if the changes in the new edition will quite meet native requirements.

SOCIAL FEATURES AT AMERICAN MEETINGS of pharmaceutical associations tend too often in a direction that is scarcely professional, and the editor of the *American Journal of Pharmacy* notes that "the Olympic tendencies have run rampant in a number of the States this year." We should imagine it must be difficult to run rampant but, nevertheless, sympathise with our contemporary in this matter. There is most certainly a considerable loss of dignity in accepting trumpery prizes for papers read at such meetings, attractive as the bottle of pepsin essence or pot of tooth paste offered may be, and the shrewd suggestion that the retail pharmacist ultimately bears the cost of all prizes offered by wholesale houses is probably not far from the truth. The article referred to concludes as follows:—"We have heard much of the profession of pharmacy and of its equality with that of medicine; but what State medical society would waste time at a meeting by devoting it to guessing contests and racing events? The profession of pharmacy will be just what its members make it—no more, no less," and to this all true pharmacists will say "Amen!"

EXTRACT OF ACONITE.—The answers given to the question put last year by the Therapeutic Committee of the British Medical Association as to the use of this preparation, caused considerable surprise, as they appeared to indicate that the extract was largely used for internal administration. As a result of further inquiry, it now appears that in many instances the answers originally given were due to misapprehension. On the basis of the further information obtained, the Committee has published a special report on this preparation, signed by Dr. Leech, as Chairman, and by Dr. Nestor Tirard, the Honorary Secretary. The conclusion now arrived at is that very few practitioners believe strongly in the value of extract of aconite: also that its use is largely confined to varieties of neuralgic affections, in which its value is difficult to estimate From the different doses employed and the different effects observed, either great variation of strength or deterioration (which is almost inevitable by the official mode of preparation) is spoken of as being very probable with some of the samples, as much as thirty grains having been given three times a day in one instance without producing toxic symptoms. Under these circumstances the Therapeutic Committee cannot advise the retention of the present extract of aconite in the British Pharmacopœia, though it may be desirable to introduce some solid preparation of aconite or of aconitine which can be employed internally with safety.

BACTERIOLOGICAL EXAMINATION OF WATER, ETC.—In the course of one of the Harben lectures recently delivered to the British Institute of Public Health, Dr. Klein pointed out the necessity of taking account of anærobic as well as ærobic microbes in making a bacteriological examination to ascertain sewage pollution. In a recent instance he had found that while the purifying treatment to which a sewage effluent had been subjected, reduced the ærobic microbes from 3,000,000 to 160 per cubic centimetre, the anærobic microbes remained quite unaffected. The general neglect of this point was stated to render bacteriological examinations of sewage and water imperfect. Owing to the difficulty of detecting the typhoid bacillus when its presence is masked by enormous quantities of the commoner bacilli usually present in the liquids examined, the statements frequently made in regard to samples of water, milk, etc., that they do not contain the typhoid bacillus, are quite valueless. Milk that is quite honest and of good quality in other respects is often found to contain from 40,000 to 250,000 microbes per cubic centimetre, and the chance of finding the typhoid bacillus in ordinary cases, where it is present only in small quantities, will be very remote. The only safe rule is to regard with suspicion any liquids in which the presence of sewage organisms has been demonstrated, whether the typhoid bacillus be found or not.

THE CONFERENCE AT LIVERPOOL.—In addition to the railway arrangements in connection with the Conference referred to last week, Mr. W. A. H. Naylor informs us that if twenty members and friends decide to travel to Liverpool together on Monday, the Midland Railway Company will put on a luncheon car. A very convenient train by this route, which passes through the most picturesque portion of North Derbyshire, leaves London at 12.10 p.m., and arrives in Liverpool at 5.20 p.m., thus allowing ample time to dress and dine before the reception at 8.0 p.m. Passengers from the different towns on the route can join the Conference party if they will previously communicate with Mr. J. C. Nightingale, at 38, Southwark Street, S.E. The times of departure of this train from the chief towns are:—Northampton, 12.42 p.m.; Nottingham, 2.15; Leicester, 2.20; Derby, 3.5. A quicker train leaves Euston Station at 12.10 p.m., and arrives at Liverpool at 5 o'clock, the time from Northampton being 1.46, from Rugby 2.17, from Birmingham 3.47, and from Crewe 4·5 p.m.

SOCIETY OF CHEMICAL INDUSTRY.

ANNUAL MEETING.

EXCURSION TO CAVERSHAM AND WINDSOR.

It was particularly unfortunate that the one really cold and wet day of July should have been singled out by the Clerk of the Weather for the whole-day excursion of this Society, and the attendance was undoubtedly affected to a considerable extent. This conduced to comfort, however, as there was no overcrowding, either in the train or on the launches. Starting from Paddington by special train, the members and their friends walked from Reading station to the river, and, after a lively, if somewhat cheerless, run to Medmenham, luncheon came as a blessing and a relief. Then imbued with fresh courage the company braved the elements once more, but the party grew less and less as the proximity of riverside stations rendered escape possible, and the number who sat down to tea at Surly Hall was therefore perceptibly smaller than at luncheon time. The day's programme was carried out to the end, however, by a loyal majority, and home was not reached until 10 p.m.

EXCURSION TO WOOLWICH.

Shortly after nine o'clock on Friday morning the members assembled at Cannon Street Station (S.E.Ry.), and were conveyed by special train to Woolwich. Alighting from the train the party proceeded to the Royal Arsenal, where arrangements had been made for them to take a general survey of this large Government establishment, employing over 15,000 men. Amongst the numerous departments visited, none were of greater general interest than those in which the latest type of large guns (the 12-inch wire gun) was in process of manufacture. This gun is gradually replacing the old 110 ton gun, and is capable of discharging a shell a distance of fourteen miles. The manufacture of explosive shells was also observed with keen interest, and the work carried on in the various departments and the different processes were briefly but clearly explained by the officials in charge of the visitors.

A little before one o'clock the party, having spent three hours in the Arsenal, adjourned to the Masonic Temple, Mount Pleasant, where an excellent luncheon was in readiness. The President (Mr. T. Tyrer) took the chair in the Upper Hall, Mr. B. E. R. Newlands presiding in the Lower Hall. Before leaving the tables Mr. Tyrer rose and said that although it had not been intended to have any speeches at the luncheons, he thought they would pardon him for breaking the rule on that occasion, as they had present with them Professor C. F. Chandler, of New York, Chairman of the American Society of Chemical Industry. He then went on to describe the generous and hearty reception accorded to himself and Dr. Mond by Professor Chandler and the American Society on the occasion of their visit as delegates to that country. He therefore asked them, while giving a hearty welcome to all their guests and visitors, to give a most cordial and warm welcome to Professor Chandler, and to drink his health.

The toast was drunk with the utmost enthusiasm, amid loud cheering, both in the Upper and Lower Halls. Professor Chandler after thanking those present for the hearty way in which they had drunk his health said, with regard to the unpleasant feelings sometimes said to exist in America against Great Britain, he could assure them that if ever such feelings did exist, they only lasted for a moment, and then were entertained only by a very limited portion of the population. The majority of Americans looked upon themselves almost as Britishers, and in many instances did their best to imitate the British, as was proved by the fact that in establishing the American Society of Chemical Industry they had taken the English Society as their model, and had as nearly as possible formed their Society on the same lines. Personally, he could assure them that there was not one drop of blood in his body except pure English. The President then called upon Mr. Newlands, who said that while the President had been presiding in "heaven," he had been presiding downstairs, where they had been making a tremendous noise, but he could assure Professor Chandler that it was all owing to his health being so heartily proposed and drunk.

After luncheon, six special tram-cars being in waiting, the party proceeded to Charlton, to Messrs. Siemens Bros. and Co.'s electrical and telegraph cable works. Here every preparation appeared to have been made for the convenience of the visitors, who, on arriving at the main entrance, were divided into groups of about twenty and placed in charge of two officials, the members of each group being provided with a badge of the same colour as the flag which was carried before each section, so that on going over the works as the different parties met at various points there was no confusion. The works extend along the river bank for a distance of about a quarter of a mile, several hundreds of hands being employed. Here the visitors witnessed the many and various processes under which telegraph cables are developed, from the testing of the wire to the testing of the manufactured cable. The tests are of the most practical kind, every conceivable circumstance under which the cable will have to do its work being taken into consideration. Thus all "core" for deep-sea cable is submitted to hydraulic pressure, so as to search out any little defect, and on being completed the cable is stored under water until such time as it is delivered on board ship. Almost every kind of electric instrument and apparatus is to be seen in the large show room, and this department was especially interesting to the visitors. Several demonstrations to illustrate the power of electricity were given, and proved to be very interesting. Considerable amusement was caused by the electrical fire engine, which can be got to work at once by attaching its electric motor, driving a rotary pump to the electric distributing mains by means of a concentric cable. The engine is capable of throwing a large volume of water to a great height, and can be taken from place to place in the same manner as any ordinary fire engine. About five o'clock, after having spent a most interesting time in the works, the party was conveyed by tram-cars to Charlton Station, and then by special train to Charing Cross Station.

RECEPTION AND DINNER.

In the evening the President, Mr. Thomas Tyrer, held a reception at the Hotel Cecil, and subsequently the members dined together, the attendance being so large as to necessitate an "overflow" banquet. Amongst those present were Professor Chandler (President of the New York section), Dr. Ludwig Mond, Mr. John Glover, Sir Robert Pullar, Sir W. H. Bailey, Professor Tilden, Mr. Macfarlane (Chief Analyst of Canada), the Japanese Consul-General, Mr. B. E. R. Newlands (Chairman of the London section), and various chairmen of provincial sections. There were no speeches at the dinner, and the after proceedings took the form of a smoking concert in the Prince's Room. The programme included glees by the Guildhall Glee Singers, songs by Mr. Edward Welford, Mr. Herbert Simmons, and Mr. Arthur Burford; recitations by Mr. Charles Collette, Mr. E. J. Odell, and Dr. Lewkowitsch (Manchester); and a humorous lecture by Mr. A. H. Allen (Sheffield). During an interval the Chairman briefly proposed "Success to the Society," commenting on the great services which it had rendered to the cause of chemical industry.

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION.

The quarterly general meeting of Plymouth, Devonport, Stonehouse and District Chemists' Association was held on Wednesday July 15, at the Foresters' Hall, Plymouth. Mr. C. J. Park occupied the chair, and the attendance included Messrs. J. G. Netting, J. Cocks, G. Breeze, O. A. Reade, P. A. Kelly, E. A. Hodge, J. W. Swainson, A. D. Breeze, F. W. Hunt, R. H. Rendle, W. Condy U'Ren.—Mr. Carveth was elected a member of the Association.—Mr. Cocks said he had gone to considerable trouble to find out the suggested course of study for recommending apprentices to adopt. He had consulted a large number of gentlemen as to the course of study and, if worked out, it would probably, he thought, be a grand thing for the juniors. According to the replies he had received from prominent gentlemen, there was no doubt as to what matters should be taken up during the first two years, but matters became difficult to solve after that, and he asked for a small committee to assist him in tabulating the course of studies. Messrs. E. A. Hodge J. R. Johnson, R.N., H. W. Woods, J. Cocks, and the President, *ex-officio*, were elected on a special committee to assist Mr. Cocks. The agenda of the Federated Associations' annual meeting was read, and it was decided to continue to subscribe to the Association, although a general opinion prevailed that the Federation had been far from energetic. Mr. C. J. Park, President, was appointed delegate for the Federation to represent the Plymouth Chemists' Association. Mr. Park was requested to support Sir John Lubbock's Early Closing Bill, and it was agreed that Lord Herschell's amendment of the Companies Bill is worthy of the general support of pharmacists, and that the clause should be retrospective. Mr. Cocks suggested a scheme of exchange for unsaleable articles. He thought it would be of great advantage to have a list hung up in the Association's room, so that any gentleman could let his colleagues know of any article he had on hand which he would

be happy to exchange for some other material of more use to him. His motion that a list should be placed in the Association's rooms was seconded by Mr. Netting and unanimously adopted. Mr. Cocks' suggestion that an additional £10 10*s.* be given to any junior of the Association who might secure the Bell's scholarship was discussed, and Mr. J. G. Netting then moved:—

"That the members of the Plymouth, Devonport, Stonehouse and District Chemists' Association desire to express their sincere and hearty thanks to Mr. Michael Carteighe for his great services and interest shown to chemists during his fourteen years as President of the Pharmaceutical Society of Great Britain, and his earnest efforts for the good of chemists generally, and humbly trust that he will still continue to devote his unparalleled abilities in the future."

The resolution was seconded by Mr. Cocks, and unanimously carried.

Directly following the quarterly meeting there were two committee meetings. The Chemists' Association Outing Committee—Mr. J. G. Netting, Chairman, and Mr. A. D. Breeze, Hon. Sec. and Treasurer—held its final meeting, and settled the Treasurer's balance sheet. A meeting of the Pharmacy Ball Committee—Mr. C. J. Park, Chairman, and Messrs. F. Maitland and H. O. Westcott, Hon. Secs.—was called to decide what should be done with the remainder of the balance in hand, £8. The advisability of purchasing a book-case for the rooms of the Association was considered.

PROCEEDINGS UNDER THE PHARMACY ACT.

SALE OF POISON BY UNREGISTERED PERSONS.

Pharmaceutical Society of Great Britain v. *John Dickinson.*

On the 21st inst., before His Honour Judge Meynell, at the County Court, Durham, John Dickinson, of Chester-le-Street, was sued by the Council of the Pharmaceutical Society of Great Britain for a penalty of £5 incurred by him in selling poison—viz., morphine—contrary to the provisions of the Pharmacy Act, 1868.

Mr. T. R. Grey, instructed by Messrs. Flux, Thompson, and Flux, appeared for the Society. Defendant appeared in person.

Mr. Grey stated that defendant was assistant to Messrs. Walton and Co., chemists of Chester-le-Street, and he was sued for a penalty of £5 under Section 15 of the Pharmacy Act, 1868, for selling poison. On May 22 last, defendant sold a bottle of Powell's Balsam of Aniseed which contained morphine, a poison included in the Schedule to the said Act.

His Honour: Who is defendant assistant to?

Mr. Grey: Walton and Co., whoever they are.

His Honour: Are they registered?

Mr. Grey: That does not matter. There is a case of the Pharmaceutical Society *v.* Armson which decides that Powell's balsam is a poison within the Act, and another case of the Pharmaceutical Society *v.* Wheeldon, in which it was held that an unqualified assistant, although acting on behalf of a qualified employer, is liable for penalties if he sells poisons, and that authority covered this case.

His Honour (to defendant): Are you registered?

Defendant: I am not.

Harry Moon, examined by Mr. Grey: I received the bottle of Powell's balsam from Arthur Foulds—it was in the wrapper produced, and fastened at both ends. I opened the wrapper and handed the bottle to the analyst.

His Honour: Do you ask any questions?

Defendant: No.

Ernest J. Eastes, F.I.C., examined by Mr. Grey: I analysed the contents of bottle produced. I found morphine and other substances, proving that the article was a preparation of opium. I found one-tenth of a grain of morphine. That quantity would be injurious. Smaller quantities have been known to prove fatal.

His Honour (to defendant): Do you admit that you sold the bottle of Powell's balsam?

Defendant: No—I have no recollection of having sold any.

Mr. Grey: I am in a difficulty. I have just received information that my other witness cannot be here before three o'clock—if your Honour could adjourn for a short time.

His Honour: This is the last case—I will adjourn it to the next court day.

Adjourned accordingly.

Pharmaceutical Society of Great Britain v. *Harry W. Ryott.*

This case had been down for hearing at the same court, and

Mr. Grey said: I have to make an application to your Honour. This is a similar case to the former, the defendant who resides in Durham, having been sued for selling poison. Yesterday plaintiff's solicitors received intimation by telegram that defendant had paid the amount into court. As that was not done until after the time allowed by the rules of the court, and after witnesses and counsel had been instructed to be here to-day, I have to ask for an order against defendant for payment of further costs.

His Honour: Certainly. I will deal with the costs after the other case is disposed of.

LEGAL REPORT.

DISPUTED PROPRIETORSHIP OF AN OINTMENT RECIPE.

In the Court of Session, Edinburgh, on Thursday last, evidence was led before Lord Low in the action by Wm. Mathison, Inverleith Place, Edinburgh, Alexander Porteous, leather merchant, Edinburgh, and others, members of the Porteous Vegetable Ointment Co., against Archibald Porteous, commission agent, residing at Abercromby Place, Stirling, and carrying on business at 33, Ann Street, Glasgow. The complainers, of whom Alex. Porteous is the principal, seek to have Archibald Porteous, brother of Alexander, interdicted from making and selling ointment under the name of Porteous vegetable ointment, or from advertising that he is the sole proprietor or possessor of the original recipe of the ointment known in the market by that name. The respondent denies that the complainer has an exclusive right in the recipe, and alleges that he and the other members of the Porteous family have an equal right with the complainer to make and sell the ointment.

Alex. Porteous in the course of his evidence stated that his grand-uncle, Alexander Porteous, who resided and carried on business at Spence's Place, Edinburgh, was the original inventor and maker of this ointment, that on his death witness's father, Alex. Porteous, senior, acquired a right to the recipe and the goodwill connected with the manufacture and sale of the ointment. His father and uncle Archibald were in partnership as leather merchants, in Rose Street, Edinburgh, from 1858 to 1867, when Archibald withdrew from the partnership. During that time they were jointly interested in making and selling the ointment, which was treated as an asset of the business and the copartnery. In 1870 witness was assumed as a partner by his father and continued as such till 1877, when his father died. Witness then took over the whole business, including the right to make and sell the ointment. He continued to deal in the ointment till July last year, when he made over his interest in the recipe to a syndicate. It came to his knowledge that his brother, who had never had any interest in his father's business, had begun to sell the ointment in boxes similar to those used by witness, and was issuing similar circulars and advertising that he was the possessor of the original recipe. That was not the case and they were an infringement of his rights. The profits of the ointment were treated as an asset of the leather business, which witness took over at his father's death.

In cross-examination, witness said he was not aware that a copy of the recipe was in existence other than the one in his possession. He could not explain how it was that the books of the business showed that in 1875 the ointment profits, amounting to £43 17*s.* 1*d.*, were credited to his father.

Archibald Wilkie said he had been an assistant in the complainer's shop since 1863. Before that, when he was quite young, he remembered getting Porteous' vegetable ointment for his eyes from Mr. Alex. Porteous, of Spence's Place. He used to be known sometimes as Dr. Porteous. He was well known as the manufacturer of the ointment. At first, after he entered the complainer's firm, he used to prepare the utensils for making the ointment, and he gradually got the knowledge for making it himself from complainer's father. Complainer continued making the ointment after his father's death. It was not advertised or pushed till the syndicate took it up.

Cross-examined, witness said the profits of the ointment were entered as profits of the business. He had so entered them himself. It was a separate branch of the business. He never heard of

Alexander Porteous, of Spence's Place, speak of his brother Duncan. Archibald, another brother, had spoken of him, but not in connection with the making of the ointment. He never heard where Alexander got the recipe. He seemed to be a scientific gentleman who studied that sort of thing.

Mr. Robert Dick, a partner in the firm of Messrs. Duncan and Flockhart, said he had been in business for more than thirty years and had known the ointment called Porteous' vegetable ointment for nearly all that time. His firm purchased the ointment from Porteous and Son, leather merchants, Rose Street, and so far as he knew it was not manufactured by anyone else. It had a good reputation, and was known by chemists all over Scotland. His firm supplied it to chemists in various parts of Scotland. The respondent's boxes and circulars were apt to mislead the public into the belief that they were getting the ointment of the Edinburgh firm.

Cross-examined: He did not know if the ointment was known in Glasgow. He could not say if he got orders from Dalkeith. A chemist would not be misled by the appearance of the respondent's boxes.

John Robertson, chemist and druggist, North-West Circus Place; James Henderson, chemist and druggist, Dundee; Peter Boa, chemist and druggist, George Street, Edinburgh; and George H. Laird, chemist and druggist, Queensferry Street, Edinburgh, supported Mr. Dick's evidence. Mr. Boa said Mr. Mackay, whom he succeeded in business, had a pass-book in connection with his purchases of the ointment from the firm in Rose Street beginning in 1865, and witness continued to purchase it after he got the business in 1886. He had supplied the Glasgow Apothecaries Co. with the ointment for several years, and sent seven dozen to them this year. He did not know of any ointment sold under that name except the Edinburgh ointment.

Mr. J. R. Hill, Assistant Secretary of the Pharmaceutical Society, also corroborated. The ointment, he said, should be sold only by chemists. He would say the original circular was in possession of the respondent when he printed the one shown him. The respondent's box was very like that of the complainer, but the public looked at the label rather than the box. The label shown did not state who manufactured the ointment, but it stated that the agents were the Glasgow Apothecaries Co.

This closed the evidence for the complainers.

Counsel for the respondent then read the evidence of Mrs. Aitken, 77 years old, and residing in Musselburgh, which was taken on commission. She said her father's name was Archibald Porteous, and he had three brothers—Duncan, Alexander, and Peter. Peter had a son named Alexander, who was a leather merchant in Edinburgh. Duncan Porteous was a publican at Todhills, Dalkeith, and he made the ointment in his own name. He got the original recipe from a lady who lived next to him. Her uncle Alexander, who lived in Spence's Place, Edinburgh, used to be troubled with pimples on his face, and his brother gave him a box of the ointment for it. Alexander asked for a box so often that at last Duncan gave him a copy of the recipe, and he made it for himself. Before his death Duncan lived with witness's sister, Mrs. Scott. Mrs. Scott made the ointment first in Duncan's name, and then in her own. She supplied shops and the public with it. Witness had sold it in her uncle's name, and afterwards in Mrs. Scott's name. She never understood the recipe was the private property of anyone.

Mrs. Jessie Gordon, or Porteous, 66 years of age, Hanover Road, London, said she was married in 1852 to Archibald Porteous, uncle of the complainer and respondent. His father's name was Peter. Her husband was in partnership with the complainer's father. When she was seven or eight years old she remembered Duncan Porteous selling the ointment. After she was married she used to make the ointment for Duncan, and so did Mrs. Scott. Duncan died between 1868 and 1871. Alexander, of Spence's Place, was a brother, and she had heard Duncan say he gave Alexander the recipe when he was out of a situation in order that he might have something to live by. She had heard her husband say that he and his brother made a profit from the ointment of £30 or £40 a year. He left the business in 1867 and went to Elgin. He continued to make the ointment there till 1871, when he died, and then witness made it till she went to London. A daughter of hers in Elgin made the ointment still. A few years ago she got a box of Porteous' vegetable ointment from New Zealand. A nephew of her husband, a brother of the complainer and respondent, took a copy of the recipe to New Zealand with him, and sold it to a chemist there, who manufactured it. It was not true that the ointment had always been identified with the Rose Street business.

Cross-examined:—She was not aware that supplies went from Rose Street all over Scotland. Neither her husband nor she ever supplied chemists with it. Witness showed a copy of the recipe which belonged to her.

Archibald Porteous, the respondent, said he noticed an advertisement in the newspapers in October last about Porteous' vegetable ointment being taken up by a syndicate. When he asked his brother about it, he said he got £1000 for the recipe. Witness replied "That's good news," but complainer then went away suddenly to see a customer. There was a subsequent correspondence between them, and on November 4 witness told his brother he had a recipe. He asked where he got it. Witness said it was in his father's handwriting, and the handwriting on the back of the envelope was his mother's. His sister, Mrs. Allan, gave it to him. She got it from her mother. It was dated 1847, five years before witness was born. He registered it on November 7 last. He got the directions for his circular from an old one used by his father. His brother William went to New Zealand in 1873. Witness saw him away, and he showed him a copy of the recipe, which he said he was going to sell out there.

Mrs. Allan, wife of a chemist in Glasgow, gave corroborative evidence.

Mr. Jas. Craig, chartered accountant, said he had gone over the books of complainer's business. They did not show that the profits of the ointment business were treated as an asset of the leather business.

This closed the evidence. His Lordship reserved judgment.

PARLIAMENTARY NOTES AND NEWS.

RE-STAMPING WEIGHTS.—In answer to Mr. Broadhurst, the President of the Board of Trade has stated that it is not necessary to have weights re-stamped on removal from one county to another.

THE LONDON UNIVERSITY COMMISSION BILL was read a second time in the House of Lords on the 23rd instant. Indication of active opposition has already appeared in the shape of a manifesto of the University Defence Association.

THE METRIC SYSTEM.—A Bill dealing with the metric system of weights and measures will, so Mr. Ritchie intimated a few nights ago, be shortly introduced into Parliament, but the Government has no intention of proceeding with the Bill beyond its initial stage. The measure, however, will be printed and circulated, and will give those who are interested in the subject an opportunity of judging the attitude of Her Majesty's ministers in relation thereto.

THE COMPANIES BILL.—The sixth meeting of the Select Committee on this Bill took place on the 17th instant. Two witnesses were examined—Mr. W. M'Kenzie, of the Dundee Chamber of Commerce, and Mr. Mellor, representing the Association of Trade Protection Societies. Both seemed to have been briefed by the "poor but honest" director. Mr. M'Kenzie objected to the Bill because it would embarrass the good director and deter him from taking office. The best way to exclude bad directors was to encourage good; and in support of that comforting truism he proceeded to advocate something very much like free trade in directors. The Dundee Chamber, said Mr. M'Kenzie, was unanimously of opinion that the existing discouragements for directors should not be increased but rather diminished. The witness himself had found it increasingly difficult to obtain good directors, but he did not enlighten the Committee as to the cause. Perhaps the Dundee standard of ethics is too high for average mortals. The witness went on to display so ardent a sympathy with the "figure-head" or "dummy" variety of director that one or two members of the Committee interposed with pointed questions: "Do you think it desirable to encourage this sort of director?" queried the Chairman. "If the parties (shareholders and directors) are agreed," was the rejoinder, "nobody has a right to complain."

Evidently the Lord Chancellor has some experience of the approved methods of obtaining such agreements, for he mildly rebuked the witness with the dictum: "I should have thought that a director who assumed the character of a director should bear the responsibilities of the character." So would most persons with old-fashioned ideas of rectitude, but Mr. M'Kenzie was able to assure his Lordship that there were many directors of the "figure-head" sort whose share in the administration of a company was a silent one. "And do all the shareholders know of it?" asked

the Chairman. "Oh, yes," replied the witness, whereat the Lord Chancellor ceased from further interrogation. A most interesting part of the evidence was that devoted to the consideration of directors of insurance and shipping companies. Mr. M'Kenzie said that the directors of such companies could not be themselves familiar with the details of the business, and must, therefore, trust to the executive officer. "What is the good of them, then?" asked Earl Dudley, pertinently. "For consultation," suggested the witness. "But," persisted Lord Dudley, "if they do not know the details what is the use of their counsel?" This argument might be with equal force urged against the unqualified directors of drug companies, the only difference being that in the shipping or insurance concerns the ignorant directors have a competent manager to fall back upon, whereas most managers of drug companies are as devoid of technical knowledge as their directors.

Mr. Mellor's evidence presented no points of special interest. He generally approved of the Bill, but thought the provisions as to the duties and liabilities of directors were too stringent. The Committee adjourned, and presented a report to the House of Lords the same night.

BUSINESS OF THE SESSION.—The remainder of the present Session (which Mr. Balfour still hopes to close on or about August 12) will be taken up entirely by Government business, and the record of Parliamentary proceedings henceforth will be enlivened by no reference to the advancement of such measures as the Shops (Early Closing) Bill or Assistants (Half Holiday) Bill. It was stated officially, on Monday night, that no private member's Bill could have any chance of coming on for further discussion, and that there was no possibility of any relaxation of the rule with regard to any Bill in the smallest degree opposed. Mr. Balfour referred to the fact that there were certain departmental Bills which it would be necessary to pass, but we are given to understand that the Companies Bill is not one of them. The Teachers Registration Bill, as hinted in these columns some time ago, has been jettisoned by the Ministry.

ENGLISH NEWS.

POISONED BY AN OVERDOSE OF OPIUM.—At Selston on Saturday, July 11, Mr. W. Whittingham, District Coroner, held an inquiry with respect to the death of Joseph Wilde, a baker, who died on Friday from the effects of an overdose of opium. The evidence showed that the deceased had habitually taken opium for some years, and that he suffered from a weak heart and bronchitis. Edward Manghan, chemist's assistant, of Ironville, whose name does not appear on the Register of Chemists and Druggists, stated that he supplied deceased with half a drachm of opium. Deceased had been a customer at the shop for some time, and generally purchased the same amount of opium, once or twice a week. The Coroner said it was a peculiarity and an anomaly of the law that people were able to obtain opium and its various preparations without the least practical difficulty, and, in his opinion, this very dangerous drug ought not to be so easily obtainable as it was at the present time. The number of lives lost through an excessive indulgence in this drug was very great, and he thought the law ought to interfere and make it more difficult to obtain. A verdict of "Death from inadvertently taking an overdose of opium" was returned.

"*X*"-RAYS IN COURT. — At the Liverpool County Court on July 13, Wm. Henry Threlfall, dock labourer, sought to recover, under the Employers Liability Act, £150 from Messrs. T. and J. Harrison, shipowners, for personal injuries sustained while in their employ. The liability was admitted, and the only question for the jury was the amount of compensation. The plaintiff was knocked down by a boom which had been insecurely fastened, sustaining among other injuries a fracture of the left arm. Photographs of the injured arm, taken by Dr. Buchanan by means of the Röntgen rays, were produced, but were objected to by counsel for defendants on the ground that there was no proof that Dr. Buchanan was capable of taking photos by the new process. The doctor was, however, called, and said the process was quite simple, and anybody who had the apparatus could take the photographs. Counsel still objected, but the judge said that so far as he had read he would be able to take photographs himself. Other evidence having been given, the jury found for the plaintiff, £60 damages and costs.

VERIFICATION OF WEIGHTS AND MEASURES.—At a meeting of Cornwall County Council General Purposes Committee last week there was a lengthy discussion on the inspection of weights and measures. Mr. Cowland introduced the question of charges being made for the verification of weights and measures which were found correct. He alluded to the case of Mr. Wise, a Launceston chemist, who, for his own satisfaction, had the whole of his weights and measures verified, and although they were not even stamped, he was charged fees for verification. He thought the legality of the charge was open for doubt. The question was, he said, exciting a great deal of feeling throughout the country among chemists, and their clerk said it was a statutory fee. Mr. Wise had a letter from a friend of his in Leeds, who was charged for verification, and although in this case they were stamped, the Leeds gentleman wrote to the Board of Trade on the subject. He had a letter in return from the Board of Trade, in which they said they were informod that the Markets Committee of Leeds had instructed their clerk to return to him the sum of 4*s.* 5½*d.*, and that was returned. At Leeds there was a charge for actual stamping, and here the weight was simply verified, found correct, and passed back. Mr. Wise contended that he should not, under these circumstances, be charged for having satisfied his own mind that his scales and weights were correct. On the motion of Mr. Anderton, a resolution was carried that the clerk should write to the Board of Trade on the matter, and obtain information as to the practice of other county councils.

CARBOLIC ACID FOR HERB BEER.—Mr. Edward Roberts, builder and slater, of Cefn Mawr, North Wales, was engaged doing some work on Monday evening at a house in Newbridge, Ruabon, when he took a drink out of a bottle which he thought contained herb beer, but which contained carbolic acid, which he used for disinfecting purposes. The unfortunate man died a few minutes afterwards, suffering terrible agony. The deceased, who was well-known in the district, leaves a widow and five children.

FOREIGN NEWS.

CULTIVATION OF MEDICINAL PLANTS IN RUSSIA.—According to the *Apotheker Zeitung*, the growth of medicinal plants such as chamomiles, peppermint, and umbelliferous seed in Southern Russia and the Caucasus has recently increased very considerably, and there is a large demand for these products in Germany. One firm in Hamburg is stated to import no less than 500 tons yearly.

ASAFŒTIDA PLANT IN BLOOM.—Dr. Buysman reports that in his garden at Middelburg, *Ferula asafœtida* is now in bloom, a rare occurrence in Europe. Apotheker Jacob, of Bromberg, has also had flowering plants this summer, and they are now bearing fruit abundantly. In 1859 asafœtida plants flowered in Edinburgh, and a correspondent of the *Apotheker Zeitung* states that he saw the plant flowering some years ago in the garden of Herr Max Leichtlin, at Baden Baden.

MEDICAL PRACTITIONERS IN SAXONY.—According to the census returns for the Kingdom of Saxony, the relation between the population and the number of medical practitioners was, on the average, 2731 to 1 in 1890, and 2318 in 1895. In 1890 the average number of persons to each apotheke was 12,718, and in 1895 it was 13,090. For a population of 3,783,014, in 1895, there were 1632 medical practitioners and 289 pharmacies. In Bavaria the number of medical practitioners has increased from 2315, in the previous year, to 2404. On the average there are 41·5 to 100,000 of population: in the towns 83·6, and in country districts 27·5.

NEW YORK BOTANICAL GARDEN is apparently in a healthy condition. A tract of 250 acres of Broux Park has been turned over by the Park Commission to the Board of Directors of the Garden, says the *Pharmaceutical Review*, and the infant corporation is established on a financial basis that assures future success. Plans for building a museum and herbarium, and a horticultural building, have already been submitted to the Board, the labelling of trees is proceeding, a temporary museum has been started, and $5000 of plants have been promised by a New York gardener. Columbia College herbarium and library will be placed in the new building when finished, and send its students to the Garden to study botany. The J. B. Ellis herbarium of 75,000 fungi has been secured by the Directors, and a course of lectures has been begun in co-operation with the American Museum of Natural History.

DINNER TO DR. POWER.

NEW RESEARCH LABORATORY IN LONDON.

A dinner was given at the Holborn Restaurant, on Tuesday night, to Dr. Frederick B. Power, late of the Madison University, U.S.A, who is well known in connection with organic chemical research, and as one of the principal technical workers on the Revision Committee of the American Pharmacopœia. He is the holder of the degree of Doctor of Philosophy from one of the leading German universities, and the dinner was given to him on the occasion of his acceptance of an appointment as Director of the Wellcome Research Laboratories, where he will be supported by a staff of trained experts. Among the guests present were Mr. Fletcher Moulton, Q.C., F.R.S., Professor D. E. Hughes, F.R.S., Professor R. Meldola, F.R.S., Professor Kerr, and Mr. David Howard, F.L.S., Dr. Sydney Ringer, Dr. William Murrell, and Dr. Bokenham. (Mr. Ernest Hart and Dr. Lauder Brunton, F.R S., were unable to be present.)

Professor Kerr in proposing "The Queen" said that it was absolute truth that the lady who ranked first in the estimation of the people of the United States of America was Her Majesty the Queen of England.

Mr. Charles Umney then gave "The President of the United States," expressing the hope that the negotiations between the United States of America and the President of our House of Lords, Lord Salisbury, that were now going on, would bring about happy results, and that a peaceful solution of the international difficulty which had troubled both sides of the Atlantic for some months might bef ound.

Mr. Wellcome next rose to propose the toast of the evening. He said that Dr. Power, whom they had the pleasure of welcoming that night, had been a close personal friend of his since his boyhood, and they were class-mates together at the Philadelphia College. At the same time he felt that while they were class-mates, Dr. Power was his teacher. Dr. Power developed at a very early age that peculiar genius which had so influenced his work through life, so that whilst he was a student at college, he was yet a teacher of his fellows. And they were all impressed with his brilliancy of work and modesty of manner. He carried off the laurels at that institution, taking the highest prize for his chemical work, and young as he was at that time he was the chief of Professor Parrish's laboratory, and under the guidance of that distinguished man, as well as under those other great teachers whom they were privileged to have as instructors—Professors Parrish, Proctor, and Maisch—all of whom had since passed away, he showed his first marked inclination for research, and he was urged by his fellows to follow a professional career. Soon after he graduated at the Philadelphia College he went to Germany, where, after a full course of study at the Strasburg University, he became first assistant to that distinguished scientist—Professor Flückiger. And Professsr Flückiger expressed to him, on one occasion when he was visiting him, that if he had ever known a genius in research work, that man was Dr. Power. The conscientiousness, thoroughness, and accuracy of his work, and his fertility of mind had undoubtedly impressed his former teacher. Returning to America he took up the position of Demonstrator of Analytical Chemistry at Philadelphia College, and was soon after called to the Professorship to which Professor Kerr had referred at the Madison University, which position he filled for nine years with great distinction. Then, resigning his Professorship, he accepted a tempting offer from the firm of Messrs. Schimmel and Co., and undertook the direction of their American laboratories, where his work was particularly that of research, and his work in that direction—organic work—was known to most of them. It had been characterised from first to last by thoroughness and accuracy. When a subject had been taken up by Dr. Power, even if it had apparently been exhausted by others, he found something more, but no one who had ever followed Dr. Power in his researches had succeeded in finding that he had missed anything. He (Mr. Wellcome) had long been engaged in important researches, but he found many difficulties in connection with carrying out investigations in connection with his Works, and though research at the Works was important and would always be continued, he resolved on establishing special chemical research laboratories, and he had succeeded in inducing Dr. Power to take the Directorship and control of that department, which was quite separate and distinct from all their business departments. Dr. Power would be supported by a staff of able research chemists, and he knew that the work done would be most thorough and exhaustive. Dr. Power had selected Dr. Jowett as a member of his staff, and that gentleman was known to most of them for the great number of prizes he had taken in his short career, and the splendid work he had done in conjunction with Professor Dunstan. He (Mr. Wellcome) was sure they all appreciated the importance of this research work. It was a matter which he had very much at heart, and he felt that such a Director as Dr. Power, assisted by such a staff as he would draw about him, would be able to ascertain something which might be of value not only to them but the world at large. That work would be carried out on no selfish lines, it would be controlled and dictated with the highest regard for science, and the personality of those interested ought to be a sufficient guarantee for its success.

Dr. Power, in reply, said it was a great pleasure and privilege to be introduced in so felicitous a manner to so many distinguished representatives of science and art, and to be able to form the personal acquaintance of those so highly esteemed and honoured in the professions which they severally represented. It was his sincere hope that the kindly greeting extended to him might especially serve to inaugurate many enduring and cherished friendships among those whom he now met for the first time, as well as to bind still more firmly the ties of older associations, so that as the years rolled on that occasion may be reverted to, not simply as one of ephemeral festivity, but rather as one productive of worthy aspirations and fraught with precious memories.

Mr. Fletcher Moulton, Q.C., M.P., in a speech of much humour proposed the toast of "Science Universal." He said that the chief beauty of science was that though they all felt interested in another's work, they felt, deep down in their hearts, profound pity for the men who did nothing with their own pet subject. Early had he been taught that disdain, by an old friend at Cambridge. He was a coleopterist, and once, at two o'clock in the morning, when he was fixing for the eleventh time with tender fingers into cork some stray specimens of a tropical beetle that had been caught in Kent, and was invaluable for that reason, he looked up to him and said in an access of candour, "When you come to think of it, Moulton, after beetles all else is trifling."

Professor Hughes, in reply, said that there was no other than universal science—there was no frontier to science, and it knew no country, and any scientist worthy of the name, no matter from what country he came, would be welcomed no matter to what country he went.

Mr. Newton Crane, in proposing the toast of "Medical Science," said it was hard to differentiate that night between medical science and commercial science, and he confessed to a profound respect for him who had asked them to meet Professor Power. There was a commercial aspect to the occasion, and he was sure that all present that night, and many others who had watched the career of the house of which his friend the Chairman was the head, would say that for once, at least, the commercial aspect had been sunk, so that the purely benevolent aspect of science might be supreme, and there was represented that night the desire that for science's sake there should be some degree of advancement in a commercial sense. He associated with the toast the name of Dr. Ringer, who had made the therapeutic demonstration of science something of great value to humanity.

Dr. Ringer having briefly replied,

Prof. P. Carmody, of Trinidad, proposed "The Chemical Industry," to which Mr. David Howard replied. He said that he presumed he had been selected to acknowledge that toast inasmuch as he had a somewhat long record. It was forty-five years since he first made quinine—he was twelve years old when he did it—but to that record he could add fifty-four years of the experience of his father and grandfather, since their firm had branched off from the very much more ancient firm of Allen and Hanburys, and he hoped that in the course of all those years they had learned several things. One thing they had learned was that chemical industry depended entirely upon pure science, and depending as it did upon science, it was not the matter of any one locality or nation, but of all humanity. Any little chemistry he knew he owed to his great teacher, Dr. Hofman, and, therefore, he, at any rate, owed a debt to other than Englishmen, and the more one knew of one's neighbours the more one recognised that knowledge was a whole, and that no nation had any peculiar right

to the whole of it. And upon the point that it was pure science that made applied science, let there be no mistake, they could not put too high science to work.

Professor Meldola (Technical College, Finsbury), in proposing the toast of "The Pharmaceutical Press," said that if he might make a digression he would like to express his very great satisfaction to be the means of stating, through the Press, how keenly he appreciated the enlightenment which had led their host to inaugurate a most important departure in the long list of the firm's achievements.

Dr. Paul, replying to the toast, said they might be grateful that, in return, perhaps, for no inconsiderable participation in the creation of the great American nation, the older country was a large recipient of ideas as to the advancement of commerce and science. In the commercial world such an invasion from the West had called forth that night an expression of recognition from Mr. Umney for the impulse it has given. He was glad to learn that the influence which had been exercised in that direction was about to be supplemented by bringing over to this country Professor Power to take the direction of this research laboratory. That was a step which he thought was a worthy supplement to the commercial stimulus which had undoubtedly been produced by the famous house of Burroughs and Wellcome. They were importing Dr. Power as an infectious element, and he hoped that the work which he would do would breed an infection that would seize upon some of our own people. He heartily congratulated Mr. Wellcome upon the wise step which he had taken, and wished him all success in the prosecution of it.

Mr. A. Gordon Salamon, in proposing the toast of "Our Host" said he thought they would grant that the submission of that toast could not come with better grace than from those who represented the younger branch of chemical science, because their Chairman had had it in his power, and had always manifested that power, to show encouragement and sympathy to those upon the lower rungs of the ladder. To many it would appear that the experiment in industrial chemistry which Mr. Wellcome was about to try, was somewhat of a dangerous one, and might be misunderstood by those who did not appreciate his motives. But a conversation which he had had with Mr. Wellcome enabled him to feel absolutely assured that the work which he was about to undertake was entirely disinterested and devoid of any commercial purpose whatever. He was enabled to assure himself that Mr. Wellcome felt that having achieved a considerable position in the world of industrial chemistry, it would be his pride to associate himself with its purely scientific development, and having endowed himself for research, he was going to equip others whom he would select with the greatest possible care, to add to the market of knowledge which he need not say they were most sadly in need of in this country. And so, not only by his conversation, but by the prospects and plans which Mr. Wellcome sketched forth, he (the speaker) felt convinced of his desire to really solidly assist in the march of research and to show that commercial men who derived their bread and butter from those who had gone before would not be behindhand when the opportunity for assisting themselves in the forward march of science presented itself.

Mr. Wellcome, in replying, said he thanked them most heartily for their kind expressions and he deeply appreciated their sympathy in the efforts he was making in that direction.

During the evening the Quartette Fantastique gave interesting selections of music.

OBITUARY.

COOPER.—On the 21st inst., after a few days' illness, Reginald Augustus Cooper, M.R.C.S., yourgest son of Albert Cooper, of Gloucester Road, S. Kensington. Mr. Albert Cooper's fellow-members of the Society, and his wide circle of friends in the pharmaceutical calling, will deeply sympathise with him in the heavy loss he has sustained. The deceased was only 23 years of age, and gave promise of a very successful career in the profession he had entered.

WILLIAMS.—On July 19, Winifred Gladys, the beloved child of Alfred Williams, 195, Seven Sisters Road, Finsbury Park, N.

NEW REMEDIES.

[*The notes given under this heading embody recent suggestions in therapeutics. They cover both new drugs and preparations, and old ones under new aspects. The word "parts" is used to represent parts by weight, both for solids and liquids.*]

HYPOSULPHITE OF MERCURY AND POTASSIUM IN SYPHILIS.—The value of the double hyposulphite of potassium and mercury for syphilitic affections which require mercurial treatment has been further reported upon by Rille, who has employed the following solution: Double hyposulphite of potassium and mercury, 1·25 centigrammes dissolved in 10 grammes of water. One Pravaz syringeful of this is injected once in five days. The solution should be freshly prepared, as the salt in solution is very unstable (*Nouveaux Remèdes*, xii., 156, after *Therap. Woch.*).

IODOFORM VASOGENE IN SUPPURATIONS.—A compound of a heavy hydrocarbon oil, saturated with oxygen and combined with iodoform, has been used under the name of iodoform vasogene for the disinfection of wounds. It has the advantage that the iodoform is in solution, and not merely suspended, as is the case with glycerin iodoform. It has proved specially useful in injecting tubercular abscesses, in most cases one injection into the cavity of the abscess had been sufficient to effect a cure. It is also serviceable in healing anal fissure (*Nouveaux Remèdes*, xii., 170, after *Therap. Woch.*).

TINCTURE OF HORSE-CHESTNUT FOR HÆMORRHOIDS.—Artault has found a tincture of horse-chestnut seeds (one in ten) a specific in the treatment of painful hæmorrhoids. Twenty-one consecutive cases have not given a single failure with this method of treatment. The only secondary action observed in two female cases was an accompanying emmenagogue effect. Ordinarily ten minims is taken at one dose, morning and evening, preferable before a meal, in wine or sweetened water. In special cases this may be increased without inconvenience. Its ingestion gives rise to no noticeable effect, save a slight sensation of warmth in the stomach. The author considers it the most valuable remedy in these cases (*Rev. de Thérap.*, lxiii., 137.

RESORCIN IN DERMATOLOGY.—Hartzell considers that the merits of resorcin are not sufficiently recognised in the treatment of skin diseases; it possesses such marked sedative and keratoplastic properties as to render it specially valuable in those diseases in which itching and burning are prominent symptoms. Judiciously applied to eczema, preferably in watery solution of ten to fifteen grains to the ounce, it gives excellent results, the sedative effect being increased by the addition of a half per cent. of sodium chloride. In erythematous eczema the following lotion is recommended:—Resorcin, 10 to 15 grains; glycerin, 15 minims; lime water, 1 fluid ounce. To be dabbed, not rubbed, on the surface for five minutes three or four times a day; where there is abundant serous discharge, half a drachm of bismuth subgallate may be added to the above. When the skin becomes dry and scaly, the following paste may be used:—Resorcin, 10 to 15 grains; starch powder and zinc oxide, of each 2 drachms; petrolatum, half an ounce. Resorcin also relieves the pain in ulcers from varicose veins when applied in an ointment of 5 to 20 grains in the ounce. In psoriasis it gives good results, but must be used in greater strength, such as in an ointment of 30 to 40 grains per ounce. In seborrhœa capitis the following wash is efficient:—Resorcin, 20 grains; rectified spirit, 2 drachms; liquid petrolatum, 6 drachms. To be rubbed into the scalp with the fingers or with a small sponge every other night. It should not be prescribed for patients with very fair hair, as it causes a slight discoloration. In epithelioma resorcin often acts in a remarkable way in promoting cicatrisation, for this it is used in the following plaster:—Resorcin, 72 grains; yellow wax and powdered resin of each half an ounce; olive oil a sufficiency (*Therap. Gaz.* [3], xii., 363).

CALOMEL IN THE TREATMENT OF PERSISTENT HEADACHE.—For the cure of rebellious, persistent, frontal headache, such as is often found in neurasthenia, Galliard gives 2 grains of calomel every morning for six days consecutively, care being taken to avoid mercurial stomatitis by insisting on careful attention to the cleanliness of the mouth. If a cure is not effected in the prescribed time the treatment should be abandoned (*Therap. Gaz.* [3], xii., 397, after *Journ. des Pract.*).

CORRESPONDENCE.

All Articles, Letters, Notices, and Reports intended for publication in the Journal, Books for Review, and communications respecting Editorial matters generally must be Addressed "Editor, 17, Bloomsbury Square, London," and not in any case to individuals supposed to be connected with the Editorial Staff. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

ANY INSTRUCTIONS from Members, Associates, and Students of the Pharmaceutical Society, with reference to the transmission of the Journal, should be sent to the Secretary — Mr. Richard Bremridge,— 17, Bloomsbury Square, London.

BUSINESS communications—including advertisements, orders for copies of the JOURNAL, and instructions from Subscribers respecting transmission of same—must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London. Cheques and money orders should be made payable to "Street Brothers."

CORRESPONDENTS who wish notice to be taken of their communications must write in ink, on one side of the paper only, and should authenticate the matter sent with their names and addresses—of course not necessarily for publication. No notice can be taken of anonymous communications.

DRAWINGS for illustrations should be executed twice the desired size; clean, sharp lines being drawn with a pen and liquid Chinese ink. Shading by washes is inadmissible. Photographs can be utilised in certain cases.

NAMES AND FORMULÆ should be written with extra care, all systematic names of plants and animals being underlined, and capital letters used to commence generic but not specific names.

REPRINTS of articles cannot be supplied unless authors communicate with the Editor before publication.

ANALYSIS OF CREAM OF TARTAR.

Sir,—I quite expected that my letter signed "Pharmacist" published in last week's Journal, would have caused Mr. A. H. Allen to have at once corrected the very obvious errors which I pointed out as occurring in the report of his process for the analysis of cream of tartar, and I certainly did not consider that any argument was necessary. However, on reading his reply in to-day's Journal I feel bound to enter more fully into detail. In section 2*a* of Mr. Allen's process we are directed to titrate with decinormal acid the solution of the soluble ash obtained from 1·881 gramme of the sample (the insoluble ash having been removed by filtration), and are told that in a pure sample the measure of acid required will be exactly equal to that of the decinormal alkali consumed in the direct titration of 1·881 gramme of the sample (details for which are contained in section 1 of the process). So far I quite agree with Mr. Allen; we must remember, however, that this equality also occurs in most samples, pure or impure, but when Mr. Allen goes on to say that each C.c. of deficiency represents 0·50 per cent. of calcium tartrate, I must certainly disagree. Calcium tartrate is neutral, and does not affect the amount of alkali used in section 1, and after ignition, when it is converted into calcium carbonate, it is insoluble in water, and therefore remains as part of the insoluble ash, and it does not in any way effect the titration of the soluble portion of the ash. Further, "each C.c. of deficiency" as to the amount of acid used, does not represent 0·36 per cent. of calcium sulphate, because on ignition a very considerable reduction of the SO_4 takes place. Potassium sulphide, etc., being formed which decomposed by the acid, nor does "each C.c. of deficiency" in the amount of acid used represent 0·60 per cent. of neutral potassium tartrate, but just the reverse, for any neutral potassium tartrate being converted into carbonate by ignition will increase the acid-neutralising power of the soluble ash, not diminish it, and lastly, acid potassium sulphate will tend to reduce the acid-neutralising power of the soluble ash, and not increase it as stated.

Whitehaven, July 18, 1896. ARCHIBALD KITCHIN.

BENEVOLENT FUND ELECTIONS.

Sir,—Before the next election of annuitants for the Benevolent Fund I should like to protest against the large amount of canvassing that goes on on behalf of candidates. Surely this is not the way by which the most deserving secure assistance, for the success of the applicants is to a very large extent governed by the number of friends they can gather to their assistance. Thus, an applicant from some out-of-the-world spot who has had no opportunity of becoming known to those who could influence votes on his behalf, be he the most deserving of the candidates, is probably out of the running. The canvassing is done before voters have had any opportunity of studying the merits of each case, and so when the voting papers arrive the voter often finds he has promised to assist the least deserving case of all. Let the election take place simply on the merits of each candidate (soliciting votes being considered a disqualification, especially when done, as last year, by the President of the Society and members of the Council), and I think the whole election will be fairer in its results.

Potters Bar, July 20, 1896. H. B. SHARMAN.

ANSWERS TO QUERIES.

[*Queries addressed to the "Editorial Department, 17, Bloomsbury Square, W.C.," will be replied to in the Journal as early as possible after receipt, but the Editor cannot undertake to reply to them through the post, nor is it always possible to publish answers the same week. Questions on different subjects should be written on separate slips of paper, each of which should bear the sender's name or initials. Readers requiring working formulæ for special preparations, and intimating their wants to the Editor, will be assisted as far as may be practicable. The word "parts," when used in formulæ, invariably indicates parts by weight.*]

BLUE MARKING INK FOR LINEN.—Try a strong solution of methylene blue, thickened with mucilage of acacia. If this should not prove satisfactory write again. [*Reply to* W. S.]

LIQUID FOR TOOTH PASTE.—Yes; doubtless "parts" is a misprint for pints. [*Reply to* W. H.]

HAIR CURLING LIQUID.—Pearlashes, 3 drachms; solution of ammonia, 3 drachms; glycerin, 3 drachms; rectified spirit, 3 ounces; rose-water to 24 fluid ounces. Moisten the hair with this mixture; as it dries it will curl. The hair should first be thoroughly cleansed from grease by washing with soft water to which a little liquor ammonia has been added. [*Reply to* Pill-Box.]

NURSERY HAIR-WASH.—Powdered quassia, powdered pyrethrum flowers, of each 4 ounces; glycerin, 1 ounce; oil of bay leaves, 1 drachm; proof spirit, 20 fluid ounces. Mix the powders, add the glycerin to 20 fluid ounces of proof spirit, moisten the powders with a little of this mixture, pack in a percolator, and percolate with the rest. When no more percolate drops, cautiously add a little water to the marc, and continue to percolate until a pint of liquid is obtained. To this add the essential oil and, if you like, a little eau de Cologne. Directions:—First wash the head thoroughly with a little soft soap, then dry the hair, and apply the hair-wash freely, allowing the wash to dry on. [*Reply to* Q. P.]

PLANT IDENTIFIED.—It is a creeping form of *Ranunculus flammula*. [*Reply to* L. ROBERTS.]

"QUAESTO."—See list given in Educational Supplement to Journal for September 14 last, page v. Replace Remsen's 'Organic Chemistry' by Perkin and Kipping's (Chambers, 6/6).

"G. W. J."—We shall be pleased to assist you if you will furnish your name and address, but cannot reply to anonymous communications.

"AN OLD NO. 5."—Please authenticate your letter with your name and address.

"ONE OF THEM."—We are yet awaiting your correct name and address.

CORRECTION.

EXAMINATION RESULTS.—On page 54, col. 1, lines 6 and 7 should read: Candidates failed, 136; passed, 72. The figures were transposed as printed in the official list supplied to us last week.

PUBLISHERS' NOTICE.

COVERS FOR BINDING.

CLOTH gilt lettered covers for binding the half-yearly volumes of the *Pharmaceutical Journal* are supplied by the Publishers.

THE charge, including postage, is 1*s.* 6*d.* each, and should be remitted to the Publishers, 5, Serle Street, London, W.C.

COMMUNICATIONS, LETTERS, ETC., have been received from Messrs Atkinson, Barritt, Clague, Dawney, Forret, Hardwick, Holmes Kitchin, Knight, Lawson, MacNaught, Marsden, Minno, Naylor Parker, Pennach, Sharman, Umney, Wardleworth, Widdowson, Young.

ROYAL COLLEGE OF PHYSICIANS
31 JUL 96

BRITISH PHARMACEUTICAL CONFERENCE.

THIRTY-THIRD ANNUAL MEETING,

AT LIVERPOOL.

PRESIDENTIAL ADDRESS.

BY WILLIAM MARTINDALE,

TWENTY-SIX years have elapsed since the British Pharmaceutical Conference in its annual peregrinations met in this great centre of commerce, second only to London in the Empire, and the present occasion is, in fact, a kind of silver wedding of its association with your city. It is always pleasant to revisit a place where one has been well received and entertained, and as I am one of the few officers now remaining who took part in the proceedings of the Conference on its former visit, it was with mingled feelings of pleasure and sadness that I accepted the post of President on this occasion.

It is the second time that I have been chosen to fill the office, having been President at the Cardiff meeting in 1891, and as years roll on I look back with mournful memories on the buoyant hopes of twenty-six years ago, when, as a young man, I was beginning to take an ardent interest in all that appertained to pharmacy and its advancement. I do this with more poignant feelings of regret when I find that most of those whom I knew, or with whom I made acquaintance for the first time on that occasion, are now no more. First, the genial president, Mr. Stoddart, who had gathered round him a number of fathers of pharmacy of a past generation, has been called to his rest; so, too, have John Abraham, Robert Sumner, Sugden Evans, and John Dutton. One misses also the faces of John Williams, Sandford, Mackay, Brady, Dymond, Baildon, and Atherton.

Not the least memorable event connected with that anniversary was the lucid introductory address on "Biogenesis," by the late Professor Huxley, delivered to the British Association, whose meeting was held simultaneously with our own. We shall have his illustrious disciple, Sir Joseph Lister, delivering the corresponding inaugural address here within the next two months.

The Former Meeting at Liverpool.

Our former meeting in Liverpool was one of the most successful the Conference has ever held; the membership during that year increased from about 600 to about 1500. I am sorry that of late our roll has fallen off. I trust, however, that this meeting may fill our lists, as we are surrounded by a district that is more thickly populated than any other equal area in the world; so that I hope the endeavour to recruit our forces will be as successful as before.

Of the papers read on that occasion, the subjects of some continue to excite our attention; that on the purity of beeswax, for example, is still of pharmaceutical importance. It would appear that the artificial manufacture of comb foundations for the bee from paraffin was not then commonly known as a human industry, as it was not referred to, although many samples of the wax were then found to contain paraffin as an adulterant. That beeswax is a drug to a pharmacist, we cannot deny, and as the Legislature has entrusted the Pharmaceutical Society with the responsibility of granting the diploma to practise pharmacy, we are in duty bound to see that we fulfil our trust, and discharge the obligations that have been committed to our care. In so doing we shall fulfil one of the principal objects for which the Conference was founded—"to maintain uncompromisingly the principle of purity in medicine."

Another interesting feature of the previous Liverpool session was a pharmaceutical exhibition held in connection therewith, in which local, as well as a number of other British and foreign manufacturers, were exhibitors. This was a successful display, and as free from objectionable details as any that have been held. I draw special attention to this exhibition because on that occasion it was the first opportunity that I, as well as most who attended the meeting, had of seeing and testing the physiological effects of what was then little more than a curiosity, viz., amyl nitrite. Its action had been demonstrated by Brunton and others, but it was almost unknown to physicians at that period—in 1870. Mr. John Williams kindly allowed members to try its effects, and to appreciate as well as show to others its action when inhaled or swallowed in flushing the face, and he informed us that it had been used to relieve the spasms in angina pectoris. We have now quite a cluster of these nitrogen compounds used as arterial dilators—isobutyl nitrite, sodium nitrite, nitroglycerin, hydroxylamine, and, most recently, erythrol nitrate and mannitol nitrate.

Advances Since 1868.

What advances have been made in pharmacy and medicine since then! At that date the first British Pharmacopœia that had proved successful had been published about three years, and was then making its influence generally felt.

We may take the year 1868 as the commencement of a new epoch, the beginning of a great physiological and chemical awakening in regard to the uses of chemicals as medicinal agents. It was also memorable by the passing of our Pharmacy Act and the inauguration of a system of compulsory examination and registration. I have had experience of the condition of pharmacy and medicine both anterior and subsequent to this time, at which I was engaged in hospital work, and can therefore speak from personal acquaintance with the conditions prevailing then and at the present time.

It will be interesting to reflect how we have progressed since that date. Approximately it may be shown by comparing the pharmacopœias. The London Pharmacopœia of 1851 had been in use until 1867; it is well known to you; compare its size with that of our last British Pharmacopœia—I have here a copy.

But adhering to our date, 1868, let me draw your attention to the important medicinal agents that are now largely used, which were then either not in existence, or were mere chemical curiosities. I have already mentioned amyl nitrite and the nitrites. Chloral hydrate was first exhibited at our Exeter meeting in 1869 by Daniel Hanbury, and by the following year it had created a great sensation. Its homologue, butyl-chloral hydrate, has also since been largely used. Boric acid was but a chemical rarity previous to 1875: it is now produced in tons for medicinal use, as well as for the purpose of preserving milk and foods. Regarding the desirability of the latter use of it, there may be difference of opinion, but there can be little doubt of its utility and value in hot climates, although it is being superseded by a new competitor in the field—formic aldehyde. Iodoform, too, was then but little known, and now makes its presence too evidently perceived by those who hopelessly try to have its odour disguised. With regard to carbolic acid, the

crusade against the septic conditions prevailing in hospitals had commenced about this year, *i.e*, 1868. The use of salicylic acid for the same purpose began in 1876. Salicin, obtained from the indigenous willow, although well known, was little used till 1876. The eucalyptus products were comparatively unknown here until about 1880. Menthol and thymol also, although known, were not used at the period I refer to. The introduction of the various forms of soft paraffin likewise come within this period. In this connection it is curious to recall a statement made at our last Liverpool meeting, that "the effect of the application of paraffin to the skin, though probably not injurious, if used as an adulterant of beeswax, is not sufficiently known to render its presence a matter of indifference." The medicinal use of the oleated compounds of mercury and zinc was introduced by Professor Marshall about 1870.

The Use of Active Principles.

The mydriatic alkaloids, atropine, hyoscyamine, and scopolamine, were not then defined: the useful synthetic product homatropine had not been formed, nor had the myotic alkaloid physostigmine from the Calabar bean come into use. These have rendered immense service in ophthalmic surgery. The chemical properties and therapeutic uses of jaborandi and pilocarpine, of coca and cocaine, of coto and cotoin, of strophanthus and strophanthin, of gelsemium and gelsemine, of apomorphine caffeine, cascara, chrysarobin, emetine and cephaëline, of piperazine, saccharin, and sparteine, have all been investigated within the period named, while the synthetic alkaloid eucaine now claims to be a rival of cocaine as a local anæsthetic. These two substances, eucaine and cocaine, are constitutionally allied, and probably others having similar properties will be formed. The now well-known synthetic coal-tar products, acetanilide, antipyrine, phenacetin, and phenocoll are entirely new to medicine. Naphthalin which was principally known as a nuisance in blocking our gas-pipes, has proved to be a valuable intestinal antiseptic; so also have its derivatives naphthol and betol, these as well as the preparations of guaiacol, now largely used, were all then unknown as medicinal agents. Aconitine, which was then undefined, impure, and costly, has been proved to have the constitution of acetyl-benzoyl-aconine, and can now be obtained in a pure crystalline condition at a moderate price, and pseudaconitine, from Nepaul aconite, has now been defined as having the constitution of acetyl-veratryl-pseudaconine. Of alcoholic derivatives the sulphonated products of methane—sulphonal, trional and tetronal, together with paraldehyde and urethane, have found favour as hypnotics. As a general anæsthetic ether has to some extent replaced chloroform, which was almost solely used at that time, while for local anæsthesia the chlorides of ethyl and methyl have come into use with considerable success. Of late years oxygen for inhalation has come extensively into use as a remedial agent, and the production of it from atmospheric air is now a large industry.

"Corners" in Drugs and Chemicals.

About the period I have referred to, or during the "sixties," the use of bromide of potassium for epilepsy, insomnia, and other nervous affections, was introduced, and it is curious to observe the variation in price that this salt has since undergone, and how, owing to the large demand for it, its market value has been reversed in comparison with that of iodide of potassium. It is true the price of the latter is fictitiously kept up, and medicinal demand is probably not the only cause, as both these salts are used in arts and manufactures, but the increased medicinal use of the bromide was one factor and the working of the Stassfurt Spring source another, which led to the reduction in the cost of its manufacture. Still, drugs and chemicals, like other articles of commerce, are affected by rings, corners, syndicates and combinations, which, notwithstanding the cheapening effect of the large demand I have mentioned, have had a counteracting influence on the reduction in price of such articles as iodine, cocaine, mercury, camphor and bismuth.

Another, and perhaps the most prominent instance of reduction of price by large demand, although it is true it has not the same strictly pharmaceutical bearing, is afforded by the revolution caused by the adoption of the ammonia process for the production of bicarbonate of sodium, which has in great measure replaced the Leblanc process, and which in its turn has, seriously or not, been threatened by the production of alkali by electrolysis.

This factor, the lessening of cost of production, has not always the same bearing with regard to the popular use of medicines that it has in commercial economy, for example, quinine, which is still at a very low price, is not used in the popular way in this country to anything like the extent that it was when its value was five to ten times what it is now. The public and the medical faculty have no reason to complain of the costliness of drugs at the present time. When required in quantity or for hospital use, they are with few exceptions supplied at much lower prices, as well as in a state of greater purity, owing to more extensive manufacture, commercial enterprise, and chemical ingenuity than was possible twenty-six years ago.

The Cost of Distribution.

But the cost of distribution, which is not merely a trade distribution, has to be taken into consideration; here the comparatively small demand for most of the articles used in medicine precludes the distributor or retailer from supplying them to the public at a commensurate reduction in price, as the judgment necessary in the distribution of medicines, many of which are poisons, and the care and skill requisite in their manipulation, has necessitated the careful and scientific training of those who deal in them. The pharmacist has in fact to be paid for safeguarding the public by not selling where it would be to their detriment or danger, although to his immediate advantage. In the interests of the public the sale of certain poisons is entrusted to him alone, and he is ethically bound to exercise a discretion therein, and thus to restrict his trade where it might be to the public danger. It is not merely the quantity or price of the article that affects the purchaser's decision, so much as that without any doubt or uncertainty the exact substance required shall be supplied to him. This weighs on his mind, and he has to trust in the probity and judgment of his pharmacist where he would not necessarily have to rely on these qualities in an ordinary trader. The pharmacist, therefore, as a chemist, must be worthy of this name, and it is now legally held that in all cases the individual seller of a poison must be a qualified and registered person. The pharmacist has the responsibility of selling poisonous as well as other medicines, and his care and attention both in storing and selling them needs to be continually exercised. Not only so, but he must be a judge of the quality as well as chemically able to test his wares, of which the public, in most cases, can be no judges. Hence his remuneration is not for material supplied but for special service rendered, and is therefore in many cases out of proportion to the actual commercial value of his commodities. This applies to the simple sale of drugs, though the argument is much stronger when applied to the compounding of medicines. The special training, therefore, of the individual seller or compounder

must necessarily enhance the cost of medicines to the public, who are safeguarded by such training.

Progress of "Elegant" Pharmacy.

The examples I have referred to of the progress we have made have been principally due to chemical research in isolating the principles, as well as investigating the possible combinations chemistry will afford us. This has been mostly done by analytical processes in determining the definite factors contained in or obtained from the crude materials nature supplies us with, and using them in a state of the utmost purity possible. But when we have so obtained them it is further necessary to prepare them in a suitable form for administration or medicinal use. I consider this is the special art of pharmacy of the present day, and may be regarded as synthetical pharmacy in contradistinction to the old galenical methods that obtained currency in former times. For example of the latter, take the Abernethian cathartic saline, commonly known as "Black Draught" or *Haustus Domesticus*. The senna was exhausted by infusion, the Epsom salt added, and the taste disguised by aromatic correctives and liquorice. Now we have our active principles and chemicals so purified or reduced to such small bulk that our chief aim is to preserve or dilute them in such form as to render their medicinal use safe and convenient. This lends itself to the development of "elegant pharmacy," to which I referred in my last address.

I may be pardoned if I mention as examples of such preparations some to which I have devoted much attention. Amyl nitrite, before referred to, has been, as you are aware, carefully investigated and chemically defined. It is exceedingly volatile, and as a consequence inconvenient for the patient's use unless kept hermetically sealed in glass tubes. A better example is nitroglycerin; formerly only capable of being kept for medicinal use in alcoholic solution, which owing to the evaporation of the alcohol might be of uncertain strength, but a solution of it in the fat of chocolate, and the division of this into the official tablets of nitroglycerin, have rendered it possible to provide the patient with a means of its administration which is stable and portable. Poisonous alkaloids and active principles also, whose doses are often so minute as to be reckoned by hundredths of a grain, require the utmost care in weighing and compounding.

Pharmacy being the handmaid of medicine, it is our duty to aid the medical practitioner and to be in touch with his requirements wherever our assistance may be of service to him. The application of the pharmacist's art can and should in numerous ways help him much more than is the case at present, although great advances have been made in this respect within the period I have been considering.

Medicine and Pharmacy.

The use and abuse of hypodermic injections, and the introduction of tablets for preparing these, come almost entirely into this purview, so also do medicated suppositories and other similar topical applications. Compressed tablets had been introduced and almost gone out of use again, to be re-introduced by illimitable advertisement in these latter days. Plasters have been improved by using different bases to the official ones, these and salve mulls seem to meet a requirement in dermatology. Medicated lints and wools and other antiseptic dressings have been largely used, and although strictly belonging to the pharmacist's domain, the sale of them has been largely diverted into the hands of the surgical instrument dealer. Their use is now to some extent being replaced by aseptic dressings which have been sterilised by means of heat. As to the merits of the latter it is not my province to speak definitely, but in large hospitals where they are mostly needed, which are filled with diseases in every stage of treatment, and antiseptics have a hard fight with so much that is septic, it will be difficult to preserve their asepticity and prevent their contamination. Antiseptic medicaments will therefore still continue to be used, and in devising dressings and applications to meet surgical requirements, as well as other aids to medical treatment, the dual training in the same individual of the medical practitioner and pharmacist is often desirable. The former needs the aid and co-operation of the latter.

This combined training is now becoming most difficult, and is much neglected, owing to the action of the medical examining boards, especially the Conjoint Board of the Royal Colleges of Physicians and Surgeons of London, which I referred to in my address to the Conference at Cardiff. For their examination there is now no stipulated time required to be devoted to the subjects of pharmacy and materia medica, or even to chemistry. All that is necessary is that the students' schedules are signed. There is no examination at all in practical dispensing, and now there is no separate examination in pharmacology, which may be defined as the knowledge of the physiological and therapeutic action of drugs, or the action of medicinal agents on the body in health and disease, so that a student may pass his qualifying examination, in which this subject —pharmacology—only forms a section of Part I. (Medicine), knowing comparatively little or nothing of it. So much is pharmacology decried that it is suggested that "room may be found for questions in abstract therapeutics, if, in the opinion of the examiners in medicine, such questions are desirable." *

This new departure is certainly casting discredit on the use of medicines as a factor in the healing art. "In five or six years hence," a medical writer† has said, "we shall have growing up around us men, who from sheer timidity, will rarely venture to prescribe anything but the simplest remedies," and "the unfortunate qualified practitioner" after devoting "the best years of his life to the acquirement of much useless knowledge . . . . ignorant of the means of alleviating the sufferings of his patients, will in despair fall back on the preparations of the advertising chemist."

The Value of Medicines.

Having obtained little knowledge of the chemical and pharmaceutical nature of drugs, many of our medical friends are thus losing faith in their medicinal weapons.

The "pursuit of principles or of abstract knowledge" may "be put to the front,"‡ but in the meantime the value of empirical therapeutical facts must not be ignored.

To quote Dr. Gowers, in at least four-fifths of the practice of the average practitioner§ "the therapeutic means" he "can employ," except in acute cases "are almost limited to the administration of drugs," and "in most cases" such treatment does "not only a definite but a great amount of good."

Still the medical mind searching for facts is apt to be prejudiced against the belief in medicines; it is sceptical that so little can do so much good. On my describing to a medical friend the first effect of amyl nitrite on myself, and suggesting his using it for angina pectoris, as I have mentioned, he ridiculed the idea of its ever being able to relieve that affection. Although pharmacy has progressed, there is reason to complain of the present medical neglect of medicines by many of the leading professors of the art; their appreciation of drugs I think is not commensurate with the progress I have referred to. A more harmonious co-operation of medical practitioners and pharmacists is necessary if they and we are to be of the service to the public in the way which I consider our mutual positions would indicate.

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* *Brit. Med. Journ.*, i., 96, 562.
† Murrell (*Pharm. Journ.*, vol. i., 1896, p. 219).
‡ *Brit. Med. Journ.*, i., 96, 1236.
§ *Lancet*, vol. ii., 1895, p. 1271.

We are not, unfortunately, in the same position as Continental pharmacists, that of being almost the sole purveyors to the public of the medicines prescribed by medical practitioners. There a protecting legislature, on the ground of public safety, insists on the pharmacist occupying an intermediate position between the prescriber and the patient, in a way which to British ideas of freedom would be considered in a manner intolerable. This would have restricted the supply of medicines, *plenam ad nauseam*, which was customary half a century ago by general practitioners.

Advertising Pharmacy.

On the other hand, such is the credulity of the public, the popular belief in the virtues of drugs and the persistent attraction exercised over them by manufacturers extolling their wares by means of broadcast advertisements, that they become large consumers of special medicinal preparations of the composition of which they have no knowledge. As illustrating the extent to which the demand for such articles of unknown composition has increased—you will remember that I showed you the pharmacopœia in force thirty years ago to compare with the present British pharmacopœia—I have here the catalogues of an old-established firm dealing in these preparations for the years 1868 and 1896. Compare the size of them also.

Pharmacy has advanced, but in its growth it has become changed.

> Bubbling spring had a daughter—tiny rill,

which increased to a stream, and eventually, before joining the sea became a majestic river, on which the commerce of a nation floated, but it had no longer the pristine purity with which it rose. The position of pharmacy has a tendency to become thus contaminated. Its true vocation is in aiding medicine, in which it has an ample field for noble aspirations.

Still, although many nostrums of which I have spoken are not produced by qualified pharmacists, a great many of them have been devised and are prepared by the pharmacist which are most useful and beneficial specialties, or they would not find so large a sale. Too frequently where little or no dispensing falls to the lot of the pharmacist they are the backbone of his business, and their loss would be a public calamity; they supply the "little needs" of the public, which "little needs" would otherwise be medically neglected.

Please further do not misunderstand me, I do not advocate the medical prescribing of drugs merely because the public crave for them, but the pharmacological investigation of facts empirically obtained, and the making use of these in the treatment of disease is surely one of the highest aims of medicine.

The Future of Pharmacy.

I have spoken of the immediate past of pharmacy, as well as of pharmacy present; over its future there hangs a veil which I will not attempt to lift. I have, for example, not touched on the subject of the organic serums and lymphs, and animal extracts. Hitherto the direction of pharmacy has been towards the use of definite chemical compounds and active principles; the new departure is a complete deviation from this line, the substances I have referred to being of that chemically indefinite nature that their activity can only be ascertained by pathological experiment. In my Cardiff address I referred to the medical use of various lymphs, of which I said the preparation might one day form part of the occupation of the pharmacist. The preliminary investigations must of necessity be carried out by the physiologist, but the chemical work now falls to the lot of the manufacturing chemist, and as patient physiological investigations are necessary, they are principally prepared in Germany, under medical supervision, and without the vexatious interference of the Vivisection Act.

The revision of the British Pharmacopœia is in progress, but as I am appointed to assist in this great work I cannot do more than mention the fact. I have already pointed out to you its increase in size in passing through various editions. It is to be hoped that this continued increase will be kept within bounds, that in the multiplicity of preparations of some drugs a selection of those most frequently in use only may find admission, and that obsolete drugs may be conspicuous by their absence. One great advance will be the introduction of metric weights and measures, the formulæ will be expressed in terms of both the imperial and metric systems.

Nor can I touch on the subjects of education and examination as applied to pharmacy, both of which are *sub judice* in the Council of the Pharmaceutical Society. At present our system of education is generally imperfect, because it is not graduated and systematic, and the greatest blot on our examinations is our inefficient Preliminary, which continues to be accepted as the almost universal matriculation to our craft.

It is not my province either to touch on trade politics or trade interests, nor to review the interesting scientific discoveries that have surprised the civilised world during the past twelve months, such as the x-rays and their marvellous power of penetration, the employment of acetylene gas obtained from carbides for lighting purposes, and the use of incandescent substances, either in the form of mantles or otherwise, for the more perfect combustion of coal-gas, which enables the latter still to vie with electricity as a source of light, and renders it less noxious and destructive to the purity of household and other decorations. Nor need I mention argon and helium; the discovery of these elements belongs to pure chemistry and physics.

Death-Roll of the Year.

I began by referring to the absent ones; our death-roll for the last year includes a number of members; amongst these is my old friend and colleague on the Examination Board, Mr. Linford; but taking the wider period, that since the Conference last met in Liverpool, three of the four most illustrious men whose labours on biology, and indirectly on medicine, surgery, and pharmacy have given them world-wide renown, have gone to their rest—Pasteur, Darwin, and Huxley. Happily Sir Joseph Lister still lives. I have previously referred to the latter two. These four have made names most enduring to scientific fame by their work, crowned with the most beneficent effects, in searching for the origin of the lower forms of life, checking the progress of zymotic diseases, and rendering operative and conservative surgery safe beyond the dreams of Liston or Sir Astley Cooper. But

> ". . . . Only the actions of the just
> Shall live and blossom in the dust."

This is too often the case: we fail to revere sufficiently the memories of the great men with whom or for whom we have worked, unless aided by evidences of their labour appearing frequently before us. We are, for example, assisted to do this by their handwriting and their autographs—beholding these, their presence becomes miraged before us, and when young we catch their enthusiasm, and become inspired to emulate their deeds. I had the pleasure of some acquaintance with this illustrious quartette, and their autographs are now before you. Perhaps these may encourage our younger members to follow the writers in their patient, laborious and conscientious work. Their handwriting is present, but the wider results of their labours are to be seen where health is restored to the hectic cheek, to the scrofulous, or to the patient threatened with hydrophobia—to the clustered vine with its luscious fruit, or to the silkworm spinning its cocoon to be used to adorn the peasant or to deck a queen.

British Pharmaceutical Conference.

THOSE attending the thirty-third annual meeting, who arrived at Liverpool on Saturday or Sunday, had reason to fear that their experience of fickle weather when Mr. Martindale was President on a former occasion was about to be repeated. On Sunday particularly, rain and thermometers alike fell, and not until midday Monday did orthodox Conference weather re-assert itself. The re-appearance of the sun was closely followed by the arrival of members whose idea of punctuality led them to rest content with being on the spot but a few hours in advance of the appointed time of meeting, and the number gradually increased as the afternoon wore on, the dining-room at the Adelphi Hotel having a pronounced pharmaceutical aspect when the chief meal of the day was spread. A brief interval for a smoke and chat then intervened before the time of the reception and conversazione at the Walker Art Gallery, where the President and Mrs. Martindale were formally to receive the members and their friends.

WILLIAM MARTINDALE,
PRESIDENT OF THE CONFERENCE 1891, AND 1896.

THE PRESIDENT OF THE CONFERENCE.

Of the President it is hardly necessary to say much, so well known is he, personally or by reputation, wherever pharmacy is practised. A brief statement of the chief facts of his career will not be out of place, however, and will doubtless lend additional interest to an attractive personality, in the minds of many readers of the Journal. Descended from a family of Cumberland yeomen, a fact of which he is pardonably proud, William Martindale was born in 1840, near Carlisle. He received his early education in a private school at Carlisle, and passed through the period of pupilage in the same city. Arriving in London in 1862, he entered for a course of study at the Pharmaceutical Society's School of Pharmacy and became a pharmaceutical chemist in October, 1866. For some years afterwards he was assistant in the historic house of Morson and Son, subsequently becoming Dispenser and Teacher of Pharmacy at University College Hospital, and Demonstrator of Materia Medica at University College, London. In 1873 he succeeded to the business carried on by Messrs. Hopkin and Williams in New Cavendish Street, which he has since developed to the highest pitch of excellence as an up-to-date modern pharmacy. But Mr. Martindale is best known by the invaluable and therefore indispensable book—the 'Extra Pharmacopœia'—prepared by him in conjunction with Dr. W. Wynn Westcott. First published in 1883, this book has passed through eight editions, and thousands of physicians and pharmacists doubtless wonder nowadays however they managed to exist without it. For ten years Mr. Martindale also served pharmacy as an Examiner of the Pharmaceutical Society, whilst he has for some years ministered to the needs of his craft by active service on the Council of the Society. His ceaseless activity finds additional outlets on the Council of the Royal Botanic Society, and as a Fellow of the Chemical Society, a Member of the Sanitary Institute, the Society of Arts, and the Sussex Archæological Society. Three years ago he occupied the unique position of Mayor of the ancient town of Winchilsea, and he is still a "Baron" of the Cinque Ports.

RECEPTION AND CONVERSAZIONE.

The proceedings of the Conference were very pleasantly inaugurated at the Walker Art Gallery, where the number of members and friends received by the President and Mrs Martindale approached three hundred, if it did not exceed that figure. Many ladies were present, who had come to Liverpool from all parts of the Kingdom, Scotland being very well represented, and opportunity was afforded for renewing old friendships and forming new ones—no unimportant part of the functions of the Conference. For such a purpose the Art Gallery is eminently suited, there

being ample space to accommodate a large number of guests without over-crowding, and if, as on the present occasion, the gathering were not graced by the presence of any living celebrities outside the ranks of pharmacy, the absence of such attractions was more than compensated for by the beautiful works of art which covered the walls and floors of the building, representing the genius of the most gifted men of all ages, from Praxiteles down to the late President of the Royal Academy. Whilst pictorial and plastic art were so worthily represented, that of music was by no means forgotten, a charming selection, both vocal and instrumental, being given in one of the largest rooms by the Euterpean Ladies' Orchestra, under the able direction of the Misses Scott.

Pharmacy, especially at these annual meetings, is nothing if not up to date, and it was only fitting, therefore, that the youngest child of science, radiography, should be in evidence. Mr. Leo Atkinson kindly undertook to look after the infant, and was very successful not only in displaying its charms to the best advantage possible in a crowded assembly, but in doing so without interfering, as many infants have a way of doing, with the other proceedings. Several young ladies who had amused themselves on their journey from London with attempts at cheiromancy, and had been somewhat puzzled by the revelations it affords to the adept, were much relieved at finding, with the aid of Mr. Atkinson's cryptoscope, that

The Adelphi Hotel.

whatever mystery there may be about the human hand it can be easily seen through.

Welcome by the Lord Mayor.

Tuesday morning opened with overcast sky, but yet with promise of better things, and as the day wore on the fulfilment of this promise was complete, the afternoon especially being as bright and warm as anyone—whether bent on business or pleasure—could desire. The sessions of Conference opened in the Arts Theatre of University College at 10 o'clock, when between three and four hundred members and friends were present, including many ladies. Mr. Martindale took the chair he fills so well, and at once called on the Earl of Derby to address the meeting.

In his capacity as Lord Mayor of Liverpool, Lord Derby wore the gold chain distinctive of the office, and in happily chosen words (see p. 88) he welcomed the members on behalf of the citizens of Liverpool. After the applause, with which the vote of thanks to his Lordship was heartily acclaimed, had subsided, Mr. Martindale proceeded to deliver his presidential address (see p. 81), and this was duly followed by the reception of delegates, and the presentation of the report of the Executive Committee, the financial statement of the Conference, and the report of the Unofficial Formulary Committee. All preliminary matters having thus been disposed of, such of the audience as yet remained composed themselves in a condition of more or less passive receptivity, whilst the authors of papers communicated their latest notions on matters pharmaceutical.

The River Excursion.

The reading of papers and discussions thereon continued, with an interval for the taking of a group photograph and luncheon, until 4.15 p.m., when the labours of the day being over, both workers and drones betook themselves to the Landing Stage, where the s.s. "Magnetic" was waiting to convey the party for a cruise on the Mersey and Liverpool Bay. This excursion the members were enabled to enjoy by the courtesy of Messrs. Ismay, Imrie and Co., of the White Star Line.

The steamer, which is the well-known tender of the White Star Line, first proceeded up the river, almost to the mouth of the Manchester Ship Canal, and then turned down stream. Crossing the bar the visitors were enabled to obtain a fine view of the Welsh hills, which wore a wonderful aspect as they were brilliantly lighted up by the sinking sun. Tea was served on board in a fashion which reflected the greatest credit on the arrangements made by the White Star Line on behalf of the numerous guests they so hospitably entertained. After an exceptionally pleasant trip, the Landing Stage was reached shortly before eight o'clock

University College, Liverpool.

and the members were left to their own devices for the rest of the evening.

The Excursion to Prescot.

On Wednesday the sessions of Conference were punctually resumed, and the business programme concluded in due course for another year. Then, about 4 o'clock, the more serious proceedings of the day were followed by a visit to the Lancashire Watch Factory, Prescot, coaches proceeding *via* Croxteth, the seat of the Earl of Sefton, and Knowsley Hall, the seat of the Earl of Derby, Lord Mayor of Liverpool. Watchmaking has been carried on in this district since the time of the Commonwealth, on the home or house system. Swiss and American competition, however, has forced the workers to recognise that newer conditions must prevail, and in 1887 the British Watch Company, Limited, was registered with a proposed capital of £100,000, the intention being to make complete watches, instead of parts only as formerly. The death of the chairman shortly afterwards caused the original scheme to collapse, but the following year the present company was started with a capital of £50,000, and in spite of great opposition the

undertaking has prospered. The property of the Company now covers eleven and a half acres, and the buildings have been erected so as to form parts of a large and complete factory arranged on a symmetrical plan. The factory provides accommodation for at least 1500 workpeople, and the total area of glass is 41,048 square feet. The buildings throughout are heated by steam, the total area of bench tops is 14,480 square feet, there are 5390 feet of steel rods for countershafts, and 1790 gas-jets.

Tea was served after this interesting visit, at the Royal Hotel, Prescot, and the coaches were then filled once more to proceed on the homeward journey, *via* Childwall and Sefton Park. On arrival at headquarters the remainder of the evening was devoted to the usual smoking and drawing-room concerts. Mr. Michael Carteighe occupied the chair at the former, and a most enjoyable programme was only too quickly concluded when midnight was reached.

Excursion to Chester, Eaton Hall, and Hawarden.

On Thursday morning early everyone crossed by the ferry boat to Seacombe from the St. George's Landing Stage, a passage of some ten minutes bringing the party to the Cheshire side, where the Seacombe Station, some two hundred yards from the ferry, was

St. George's Landing Stage, Liverpool.

soon reached. After passing through the usual unpicturesque cuttings, and diving in and out of one or two short tunnels, the train emerged on to a flat reclaimed stretch of marshy land interspersed with salt pools and occasional cultivated fields.

On the left was noticed Wallasey Pool, which has been converted into spacious docks running quite a distance inland, and alongside whose quays were recognised steamers of most of the well-known Liverpool and Birkenhead lines. Further along was seen Bidston Hill, on which, surrounded by trees, is Bidston Observatory, and near to it the lighthouse of the Mersey Dock Board, looking quaint in its situation so far inland, being quite two miles from the coast, Leasowe Castle, belonging to Lady Cust, is not far from the flat ground on the right, which is fringed on the shore side by a long and continuous range of sand hills relieved by the Leasowe lighthouse, which stands in a meadow on the land side. From this point onwards to the shores of the Dee the same flat ground continues, developing into a salt marsh after passing Neston. The country on the left of the line appeared well wooded, and stood out high and rocky in parts. At Parkgate are a few collieries and a small fishing village—all that is left of a once important harbour, from whence the mails were carried across to Ireland in smart sailing schooners before the shifting sands of the Dee had silted up and land-locked the port.

On arriving at the Northgate Street Station an inspection of some of the sights of Chester was organised, a Committee having been formed specially to show them to the visitors. The old walls of the city were duly inspected, and the Cathedral, in which is the tomb of Hugh Lupus, first Earl of Chester and nephew of William the Conqueror. The Phœnix Tower, not far from Northgate Street, commands a fine view of the surrounding country, and is famous as the point from which Charles the First watched the rout of his army on Rowton Heath by the Parliamentary forces on the September 27, 1645. Another fine view of the Dee, Hawarden, and Flintshire generally is afforded from what is known as Morgan's Mount, close to the Bluecoat Hospital. The Castle, the Roodeye, the race course, and Queen's Park

The Walker Art Gallery, Liverpool.

with the suspension bridge, and the famous Rows combined to give some notion of the richness of Chester in antiquities. Luncheon was served in the Town Hall, Chester, and later coaches were ready to take the party to Eaton Hall, the residence of the Duke of Westminster, about four miles south of Chester, which is a special point of attraction from the beauty of the well-kept park in which it stands, and the art treasures with which the Hall is filled. The river near the Hall is usually very lively with boating parties, and its banks, particularly the left bank going up from Chester towards Eaton Hall, affords plenty of variety to botanists.

A drive of some five miles from the Hall, past the "Golden Gates"—a fine piece of beaten artistic iron and brass work—brought the visitors to Hawarden village, in Flintshire, near the seat of the Right Hon. W. E. Gladstone. Tea was provided at the "Glynne Arms," Hawarden, and the visitors were afterwards again conveyed to Chester by coach, and thence by rail and steamer to Seacombe and Liverpool.

Conclusion.

For the benefit of visitors remaining in Liverpool on Friday, it was announced that, by the courtesy of Messrs. Lever Bros., Limited, the Sunlight Soap Works and the village of Port Sunlight would be shown to those who cared to inspect them. Small parties were also formed to visit the box-making and glass-blowing factories of Messrs. Ayrton and Saunders, the docks, overhead electric railway, Mersey Tunnel Railway pumping and ventilating works, the Royal Infirmary, etc., etc., whilst numerous other places of interest were available for inspection by those who could spare time and energy for the purpose. Though the weather was not all that could be desired throughout, the local executive committee and ladies' committee, having spared no pains to further the comfort and pleasure of their guests, the second Liverpool Conference was concluded with a sense of cheerful satisfaction in the minds of all concerned.

SESSIONS OF CONFERENCE.

FIRST DAY'S BUSINESS.

The business of the Conference proper commenced on Tuesday, July 28, at University College, the chair being taken at 10 a.m. by the President, Mr. W. Martindale. He opened the proceedings by calling on the Right Hon. the Earl of Derby, Lord Mayor of Liverpool, to say a few words of welcome to the Conference.

The Earl of Derby said it was a very pleasant duty which had been cast upon him as the representative of the citizens of Liverpool in bidding a hearty welcome to the Conference on the occasion of its second visit to the city, after a lapse of more than a quarter of a century. Liverpool was always glad to welcome the members of scientific and learned bodies, and he hoped the meeting would be not only an interesting and useful, but a very pleasant one. His Lordship went on to refer to the importance of the Pharmaceutical Society—which he evidently, like many others, to some extent confounded with the Conference—speaking of its functions in checking and preventing irregular practice, and dealing with the adulteration and sophistication of drugs. He concluded by again giving a hearty welcome to the Conference, and expressing his sense of the usefulness of the Pharmaceutical Society, as he had had reason to know when engaged in official life.

The President, in moving a vote of thanks to Lord Derby for his kindness in coming to welcome the Conference, referred to the prominent position which the noble Earl's family had always occupied in English history, and to the satisfaction which everyone felt at seeing him occupying himself in municipal duties. He also gently disclaimed on behalf of the Conference the powers which had been attributed to it by his Lordship.

Dr. C. Symes seconded the resolution of thanks, and desired especially to express the warm appreciation of his Lordship's kindness felt by the members of the Local Committee.

The vote of thanks having been carried by acclamation,

The Earl of Derby, in acknowledging it, apologised for the absence of any of the authorities of the College, and as titular head of that institution assured the Conference of the pleasure with which the hall was placed at their disposal.

The presidential address (see p. 81) was then delivered, after which

Mr. N. H. Martin proposed that the best thanks of the Conference be given to Mr. Martindale for his extremely interesting and able address. It would be impossible to attempt to review that address, but he was sure it would be read with very great attention and profit.

Mr. S. R. Atkins seconded the vote of thanks, saying he thought the President had been most happy in the line of thought which he had selected to deal with.

The vote was carried unanimously and briefly acknowledged, and the Earl of Derby then gracefully took his departure.

Reception of Delegates.

The President, having read letters of regret and apology for absence from Mr. Walter Hills, President of the Pharmaceutical Society, and Mr. Reynolds, of Leeds,

Mr. Naylor (Hon. Secretary) read a list of other gentlemen who had written regretting their unavoidable absence, including the Vice-President and Treasurer of the Society, and Messrs. Attfield, Umney, Newsholme, Gerrard, etc.

Mr. Ransom (Hon. Secretary) then read the following :—

List of Delegates.

Pharmaceutical Society of Great Britain.—Messrs. W. Hills (President), J. arrison (Vice-President), R. Hampson, Allen, Atkins, Bateson, Carteighe, Cross, Grose, Johnston, Lescher, Newsholme, Park, Savory, Southall, Symes, R. Young, the Editor, Sub-Editor, and Secretary.

North British Branch of the Pharmaceutical Society.—Messrs. J. idlaw Ewing W. L. Currie, J. Bowman, Geo. Coull, Davidson, C. Kerr, G. Lunan, T. Maben, D. MacLaren, J. Moir, J. Rutherford Hill.

Pharmaceutical Society of Ireland.—Messrs. W. F. Wells, jun., G. D. Beggs, Conyngham, Hayes, Kelly, Robinson, Payne, Guiler, McKnight, and Moffat.

Bristol Pharmaceutical Association.—Messrs. Berry and Schacht.

Edinburgh Chemists' Assistants' Association.—Messrs. Coull and Duncan.

Liverpool Chemists Assistants' Association.—Messrs. Conroy, A. C. Abraham, T. J Abraham, Bain, Buck, Cowley, Dutton, Hocker, Smith, Symes, Thompson, Wardleworth, Wellings, Wo nd Wyatt,

Liverpool Pharmaceutical Students' Society.—Messrs. Wokes, Jackson, Last, Marsden, Mitchell, Morgan, and Walker.

London Chemists' Assistants' Association.—Messrs. Robins, Strother, and E. A. Umney.

Manchester Pharmaceutical Association.—Messrs. G. S. Woolley, Kemp, Kirkby, W. Bowden, Cooper, Johnstone, Lane, Pidd, Pratt, Smith, Wild, and Young.

Sunderland Chemists' Association.—Messrs. Purse and Ranken.

Exeter Association of Chemists and Druggists.—Mr. Lake.

Bradford and District Chemists' Association.—Mr. Silson.

Cambridge Pharmaceutical Association.—Mr. Peck.

Glasgow and West of Scotland Pharmaceutical Society.—Messrs. W. L. Currie, John Foster, Brodie, Watson, McMurray, and Fraser.

Midland Pharmaceutical Association.—Messrs. Bate, Thompson, Gibbs, Prosser, Cross, Willsey, Gibson, Brevitt, Hutton, and Alcock.

Report of the Executive Committee.

The following report was next read by Mr. Naylor :—

"Your Committee, in presenting its report for the past year, believes that there is abundant evidence of the continued usefulness of the Association, the annual gathering of which appears to be much appreciated by a large body of members.

"It is, however, a matter for regret that the subscriptions show some falling off as compared with the previous year. Although a large number of new members have been elected, many old names have been removed from the Register, on account of resignations or lapsed subscriptions. Your Committee has on several occasions seriously considered what means could be adopted to reduce the expenses, and at the same time to introduce changes which might tend to an increased membership.

"At the request of the Executive the Committee of Publication met with other officers of the Conference to consider the possibility of effecting a reduction in the cost of producing the 'Year Book,' and as a result it was decided that the following alterations should be made. The "Bibliography" being a section it is believed which is not much valued by members, will in future be omitted. In order to increase the usefulness of the section "Notes and Formulæ" it was resolved that mention should in future be made as far as possible of all new remedies introduced during the year. The Secretary is authorised to curtail the reports of the discussions of papers read at the Conference meetings, and also, where possible, to condense the accounts of the social functions. The cost of printing and binding was considered, and as a result of communications with the printers, a reduction in the cost of certain items will be effected.

"The Blue List has again been subjected to revision, and some additional subjects for investigation have been included.

"No applications for money grants have been received during the year. Members are reminded that assistance in this direction is always available for expenses incurred in pharmaceutical research.

"During the past year the Conference has lost sixteen members by death and twenty-nine by resignation, while forty-five new members have been elected.

"By the death of Mr. J. S. Linford the Conference has lost one of its older members, who was regular in attending the meetings and who frequently contributed to the value of the discussions by giving the results of a long and varied experience in practical pharmacy.

"Mr. Louis Siebold, F.I.C., F.C.S., has been re-appointed Editor of the 'Year Book,' and the MS. of Parts I. to IV. is now in the hands of the printers.

"The reception by the President, which was held last night in the Walker Art Gallery, was much appreciated by a large number of members and their friends.

Mr. John Moss (Treasurer) was next called upon to present the financial statement. He said he hoped they had now arrived at the bottom of that period of depression which seemed to have set in about 1885, since when the number of members had been gradually decreasing until the present position was almost identical with what it was twenty-five years ago. A year ago special efforts were made to attract attention to the Conference and add to the membership, and the attempt was so far successful as to show that there was a considerable field from which members might be drawn if it were properly worked, and that there might yet be a period of prosperity before the Conference equal to anything which had gone before. A scheme was now being considered for making a sustained effort of the kind referred to, which he hoped would be successful. An addition of 200 members would put them quite at their ease. He then read the following financial statement :—

FINANCIAL STATEMENT FOR THE YEAR ENDING JUNE 30, 1896.

THE HON. TREASURER IN ACCOUNT WITH THE BRITISH PHARMACEUTICAL CONFERENCE.

July 1, 1895. *Dr.*	£	s.	d.	£	s.	d.
To Assets forward from last year—						
Cash in Secretary's hands	2	6	0			
Cash at Bank	27	3	7			
				29	9	7
1896.						
To Sale of Year Book by Publishers				14	13	4
,, Advertisements, 1893 volume	1	2	0			
,, ,, 1894 ,,	8	19	6			
,, ,, 1895 ,,	59	18	10			
				70	0	4
,, Unofficial Formulary, Sales by Publishers				2	5	0
,, Members' Subscriptions, from July 1, 1895, to June 30, 1896				396	4	0
,, Index Book, Sales				0	0	0
,, Liabilities on Outstanding Accounts— Messrs. Butler and Tanner, Year Book				67	5	2
				£579	17	5

June 30, 1896. *Cr.*	£	s.	d.	£	s.	d.
By Expenses of Year Book:—						
Printing, Binding, and Publishing	243	9	8			
Postage and Distributing	23	2	0			
Advertising and Publisher's charges	19	5	7			
Editor's Salary	150	0	0			
Foreign Journals for Editor	5	17	6			
				441	14	9
,, Unofficial Formulary:— Advertising and Publisher's Charges				0	19	6
,, Sundry Expenses:—						
Assistant-Secretary at Bournemouth	10	0	0			
President's Address (copies)	0	13	6			
				10	13	6
,, Assist.-Sec.'s Salary from July 1, 1895, to June 30, 1896	45	0	0			
,, Rent of Office	10	0	0			
				55	0	0
,, Blue List, Printing	3	7	6			
Postage	2	9	10			
				5	17	4
,, Postages				10	12	4
,, Printing and Stationery				11	14	6
,, Bank Charges				0	0	10
,, Petty Cash Expended				4	9	3
,, Liability of last year, since paid				13	15	0
,, Outstanding Asset, Messrs. Churchill's Account				1	8	9
,, Cheque received from Messrs. Churchill's, June, 1895, but included in their current statement				5	4	6
,, Cash in Secretary's Hand, Petty Cash	£1	0	4			
Stamps	0	14	3			
				1	14	7
,, Cash at Bank				16	12	7
				£579	17	5

THE BELL AND HILLS FUND.

1895.		£	s.	d.	£	s.	d
July 1.	To Balance in hand	16	7	6			
1896.							
June 30.	,, One Year's Dividend on Consols	9	11	8			
					25	19	2
	By Purchase of Books for Bournemouth				9	8	9
	Balance at Bank				16	10	5
	Assets—						
	Cash Balance at Bank	16	10	5			
	£360 2¾ Consolidated Stock	360	0	0			

July, 1896. Examined and found correct { F. SPINNEY, ANTHONY S. BUCK, } Auditors.

Mr. ROBINSON moved the adoption of the report and financial statement.

Mr. TAYLOR seconded the motion.

Mr. MICHAEL CARTEIGHE suggested that the question of the existence of the Conference in its present form really depended on whether the members cared about the Year Book or not. An examination of the accounts showed that nearly the whole of the subscriptions were expended on producing the Year Book.

The PRESIDENT in putting the motion, which was carried unanimously, said it depends on the individual efforts of members whether their numbers are increased to the desired extent. He also pointed out that the Conference is a very important auxiliary and feeder to the Pharmaceutical Society.

UNOFFICIAL FORMULARY COMMITTEE.

The PRESIDENT said this Committee had no report to present on this occasion, its functions having been practically in abeyance during the last eighteen months, owing to the preparation of the new edition of the Pharmacopœia.

The reading and discussion of papers was then proceeded with.

THE PHARMACY OF CONIUM MACULATUM.

BY E. H. FARR, F.C.S., AND R. WRIGHT, F.C.S.,
Pharmaceutical Chemists.

The authors first alluded to the early importance of hemlock as a medicine, its comparative neglect in the middle ages, and its re-introduction into medicine during the latter half of the eighteenth century. Allusion was made to its present comparative neglect by medical men, and the opinion expressed that this is due chiefly to the fact that most of the pharmaceutical preparations of the drug are practically inert. The work done on the subject by Drs. Christison, Harley, and Manlius Smith was then brought under review, special mention being made of the elaborate research of Dr. Harley, who clearly proved that the root, the dried leaves, and ripe fruit were almost entirely destitute of the active properties of the drug. It was shown that the results of the physiological experiments of the three physicians above-named point to the conclusion that the green fruit is the most active portion of the plant. Reference was then made to the lack of any reliable work on the pharmaceutical side of the subject until the year 1887, when Cripps devised the process which has been subsequently adapted by the authors to the assay of the preparations of conium, for determining the alkaloids of conium as hydrochlorates. The object of the authors has been to check the work of Christison, Smith, and Harley on the pharmaceutical side by obtaining specimens of the hemlock plant at different stages of its growth, and determining the alkaloidal value of the different parts. Consideration has been given to the question as to what ought to be the approximate alkaloidal strength of the pharmacopœial preparations of hemlock, calculated from the range of dosage there given, and attention is called to the fact that the different preparations of the drug as found in pharmacy are sadly lacking in potency. The results of the examination of the root, stems, leaves, flowering tops, and fresh green fruit, are shown in the accompanying table (p. 90).

Showing Source of Plants and Percentage of Alkaloidal Hydrochlorates in the Different Parts of the Fresh Plant.

Stage of development.	Source.	Roots.	Stems and stalks.	Leaves.	Flowers with peduncles.	Green fruits.
Young plants 4 to 6 inches high	Uckfield	·047	·017	·031		
Plants 4 feet high, taken before flowering.....	Hitchin	·022	·019	·120		
Plants 3 ft. to 3 ft. 6 in. high, showing incipient inflorescence	Uckfield	(*a*) cortex ·031 (*b*) axis ·032	·037	·090		
Plants 5 feet high in full flower	(*a*) Uckfield	·050	·064	187	·236	
	(*b*) Ashford, Derbys.	·018	·012	·075	·086	(1) ·725 % (2) ·975 %

The average loss of weight on drying was:—Roots, 77 per cent.; stems and stalks, 86 per cent.; leaves, 79 per cent.; flowers, 80 per cent.; fruits, 68 per cent.

The following table shows the percentages of alkaloidal hydrochlorates yielded by samples of fresh green hemlock fruit:—

Year.	1.	2.	3.	4.
1892.....	·935	·975	—	—
1893.....	·896	1·049	1·088	—
1896.....	·725	·975	—	—

The results obtained amply confirm those of previous investigators. The authors suggest that in a future Pharmacopœia the green fruit only shall be retained. They also suggest that a fluid extract of the fruit shall be introduced into the Pharmacopœia, from which other necessary preparations may be produced.

Mr. Cross said he thought it was on account of the weak and uncertain nature of the preparations of this drug that it was not more extensively used. On his recommendation a medical friend prescribed it some time ago, but it was not until the dose of succus was increased considerably that the desired effect was produced. The remarks as to the importance of using the unripe fruit were very interesting, but he had found, growing plants in his own garden, that there was great difficulty in securing the fruit before aphides destroyed them. However, he should make a renewed effort next year to secure the fruit, and make preparations from it.

Mr. Thomas Groves suggested that in the presence of such great difficulties in getting uniform preparations from the living plant, it would be as well to resort to the alkaloid, which could be obtained without going to the plant at all. He thought medical men did not generally appreciate the action of conium for it was not only out of fashion, but in some cases was even disapproved.

Mr. Bird thought the authors had done good service in insisting on the removal of these juices from the Pharmacopœia. They were very unsatisfactory, since they deposited, fermented, and were not at all preparations of which a pharmacist could be proud. He had noticed the statement in Squire that the efficacy of succus conii was not injured by evaporation, which seemed rather strange, as such a strong smell of hemlock always arose in evaporating the succus when making the ointment.

Mr. Elborne said he had had occasion to examine this preparation several times, but his statement of the results was quite inaudible at the reporters' table. The only fact which could be gathered was that conium had been found useful when all other remedies failed.

Mr. N. H. Martin said it was very important to decide whether the present preparation should be excluded or not. The succus, though some disputed its therapeutic value, was, as a fact, largely used, to his knowledge, in some asylums, which would scarcely be the case if it were valueless. In the United States Pharmacopœia the alkaloid was directed to be fixed with acetic acid; the efficiency of the liquid extract of the fresh fruit was a point for therapeutists to determine, when pharmacists had prepared it; if it were found to be active, it might well replace the present preparation.

Mr. John Moss said a question arose with regard to the suggestion of Mr. Groves, whether the same effect would be produced by a solution of the alkaloid of hemlock as by a preparation of any part of the plant. It was known that preparations of cinchona, opium, and other drugs had quite different effects from those of the alkaloids obtained from them, and it might be the same in this case. The paper itself they could hardly criticise, for Messrs. Farr and Wright did their work in such a perfect manner, planning out the investigation and then carrying it out so thoroughly that there was nothing left but simply to accept their statements. He had no doubt that the Pharmacopœia authorities would find in papers of this character some of the most useful aids in the revision of the work.

Mr. Parker said the main point in the paper seemed to be that the unripe fruit was the proper source for preparations of conium. This paper was a type of the work which should be done by the Conference, and he thought there was little doubt that the disuse of conium was largely due to the fact that existing preparations did not represent the activity of the drug, and this case showed how enormously important it was that pharmacists' opinions should have due weight in the preparation of the revised Pharmacopœia. Clearly the concentrated fluid extract of the unripe fruit was the thing needed, but its alkaloidal potency should be standardised if it were to have a definite character.

Mr. Kelly suggested that the nonactivity of the drug in the extract was probably due to the heat employed in the preparation. He knew from personal experience that the succus was a most useful preparation. There was no doubt that pharmacists could render great assistance to the medical profession with regard to the qualities of drugs and the mode of preparing them, though it was for the latter to decide as to their physiological action.

Mr. Pickard asked whether the cause of the deficiency in strength of the tincture observed by the authors might not be due to its being prepared from seed of uncertain age. Coniine was exceedingly volatile, and it occurred to him that probably it would be well to prepare the tincture from the seeds direct without any previous drying.

Mr. Collier could not join in the general condemnation of succus conii, as he knew it to be frequently prescribed with good effect. The fluid mixture was also largely used, but the pill containing the extract hardly ever.

Mr. E. T. Brewis (Ampthill) asked in what state coniine existed in the drug, and how it was combined in the preparations.

The President said the demand for conium was so great that he believed it had been almost exterminated within a distance of thirty miles from London. The point had been raised whether English or foreign fruit should be used, and on that point the British Pharmacopœia contained no direction; it simply said the fruit should be fully developed but still green, and should be carefully dried. It was still a question whether pharmaceutical or galenical preparations should not be preferred to chemical. Coniine was a very indefinite substance, the liquid alkaloid containing other principles which made it quite a mixture. Therapeutical investigation was therefore necessary before deciding that even the salts, such as the hydrobromide of coniine, could be used with any certainty as the equivalent of conium. He did not think any of these salts had the efficacy of the liquid alkaloid, coniine. There was no doubt that conium had a peculiar action as a sedative, whether applied internally or externally. Its local sedative action was very useful in allaying irritation of the skin, but he must admit that in the west end of London, at any rate, it was now very little used.

Mr. Wright, in reply, said he was disposed to agree with Mr. Groves in recommending the replacement of preparations of the drug by the alkaloid and its salts; but it was not for pharmacists to dictate to the medical profession what they should prescribe. Mr. Cross was quite right in noticing the avidity with which the fruit was attacked by aphides, but he was glad to say that he had been too quick for them, having managed to secure at Ashford, about a fortnight ago, a fair quantity, which he had analysed, and found they yielded a little over 1 per cent. of alkaloid. That tended to show, when compared with the figures given in the paper, that the amount of alkaloid increased as the fruits approached ripeness. At the same time, it was necessary that the fruits should be gathered before they were actually ripe. With regard to the evaporation of the alkaloid, he might say at once that coniine was of all substances the most stable; you might boil either the juice or the tincture, and although there was an odour given off, there was no loss of coniine. The odour was not due to the alkaloid, but probably to some volatile oil. The whole of these experiments were undertaken in consequence of a prescription coming in, in which unguentum conii was ordered, and having a suspicion of the strength of the succus, it was tested, and found

to be practically inert. As the case was pressing and important, the fluid extract previously standardised was used, and he was glad to say the preparation had the effect desired. There was no doubt that the United States pharmacists were far ahead of the English in some respects, and they had already discarded all preparations of conium except the fluid extract prepared from the fruits. The alkaloid was fixed by the addition of acetic acid, but he did not think this was really necessary, though it might be desirable to make some experiments on this point. He thoroughly endorsed the suggestion that if the fluid extract were introduced into the British Pharmacopœia it should be standardised. He did not think any deficiency in these preparations was due to loss in drying. All the experiments of which the results were given were made on dried plants, and it would be noticed that not only the percentage of alkaloid, but the average loss of weight on drying of the different parts of the plant was given. He did not think there was any loss of strength through keeping the seeds. As to the state in which the alkaloid was combined in the plant, he could not say exactly. No doubt it was combined with some kind of acid; in some text-books it was referred to as malic acid, and in others as coniic acid; but, whatever it was, no doubt the alkaloid was fixed, and the fruits could be safely dried without any fear of the coniine being dissipated in the process of preparation.

Japanese Fennel and its Oil.

BY JOHN C. UMNEY.

During the past few years there has been a constant and increasing demand for fennel, and the fruit grown in Southern Europe, which at one time represented by far the greater part of that met with in trade in this country, is now being rapidly, indeed has been almost wholly, displaced by East Indian fennel.

The Japanese, having doubtless noticed the shipments that are constantly reaching the ports of London and Liverpool from Calcutta, have turned their attention to this drug, and have recently made what would appear to have been an experimental shipment to London.

In passing it would perhaps be well to call attention to the three varieties of fennel fruit alluded to, inasmuch as, although there is not a great difference between the fruits of Southern Europe and India, the former being usually larger and more curved, there is a marked difference (in appearance) between these fruits and the Japanese variety.

This difference I am aware has misled some of those who constantly handle fennel, for one of the leading brokers in the City of London at a recent public drug auction described in his catalogue as "aniseeds" the fennel which my firm purchased and upon which I have experimented.

Although to a careless observer Japanese fennel might be mistaken for anise, still a closer examination shows that the fruits differ from anise in being more oblong and in not tapering to the apex. Each mericarp is traversed by five prominent ridges, and a microscopic examination of a transverse section of the mericarp shows at once that the vittæ are very large, either five or six in number, bordered by brown tissue.

In anise the vittæ are more numerous, twenty to thirty in each mericarp, and, except on the commissure, much smaller than in fennel. No hairs, moreover, are present on the surface of the Japanese fennel fruits such as are characteristic of anise.

In odour there is a close resemblance between European and Japanese fennel, and the taste of the latter, at first sweet, is marked by a decided after-bitterness similar to other varieties.

I am not aware that an examination of the essential oil of Japanese fennel has been made, although a sample of the oil submitted to Messrs. Schimmel and Co., Leipsic, by Mr. Paul Schramm, of Yokohama, is referred to in one of the half-yearly reports of that firm (October, 1893, p. 50), the judgment being "that the quality is not so good as that of the German oil."

The fruits yielded by steam distillation (care being taken to keep the water of the condenser at a temperature of at least 25° C., to avoid any separation of anethol), 2·7 per cent. of a pale yellowish oil, closely resembling in odour ordinary oil of sweet fennel.

The specific gravity of the oil was ·9754 at 15° C, and its optical rotation 15·5 in a tube of 100 M.m.

The specific gravity of fennel oils varies according to the relative amounts of anethol, fenchone and terpenes contained in them, samples distilled from French seeds having usually a sp. gr. of ·975 to ·980, although some Continental samples fall below those figures, owing to the abstraction of a portion of the anethol. The optical rotation also varies under the same conditions as influence specific gravity.

The oil solidifies at —7° C. when stirred, and becomes liquid again at —10° C.; these solidifying and melting points are somewhat higher than usually found, and indicate a high percentage of anethol.

The following proportions were obtained by fractionation of 100 C.c. from a glycerin bath.

Below 220° C.	26 per cent.
220-225° C.	32 per cent.
225-230° C.	34 per cent.
Residue	8 per cent.

These figures are very similar to those obtained by fractional distillation of oils distilled from French and Indian fruits.

For the examination of the terpene constituents of the oil the first 25 C.c. were removed from 200 C.c. of the oil, under reduced pressure, but by repeated fractionation of this portion only about 5 per cent. (of the original oil) could be obtained boiling below 180° C. at ordinary pressure, and this consisted of pinene and dipentene, no indication of phellandrene being obtained by the nitrite test.

The portions boiling from 180°-190 C., and 190°-200 C. were mixed and refractionated, slightly over half their volume (about 13 per cent. of the original oil) distilling between 188° C. and 194° C., *i.e.*, about the boiling point of fenchone (190-192° C.).

The amount of fenchone present, determined by reduction to its corresponding alcohol and subsequent acetylation, was found to be equal to 10·2 per cent. calculated on the original oil.

Of the 175 C.c. left after removal under reduced pressure of the 25 C.c. already referred to, 128 C.c. distilled above 226° C. This fraction still possessed slight dextro-rotatory power, had a sp. gr. of ·983 at 25° C., and solidified at 19° C. when stirred, remelting at 20-21° C., and was evidently not quite pure anethol.

The probability is that over 75 per cent. of anethol is present in the oil, in addition to fenchone and terpenes.

A careful consideration of these results indicates that the oil distilled from Japanese fennel differs but little from normal oils distilled from other varieties. The oil corresponds well with the requirements of the U.S.P., in which fennel oil is official, which are as under:—

Sp. gr. not less than ·960 at 15° C.

Between 5° and 10° C. it usually solidifies to a crystalline mass, but occasionally it remains liquid at a considerably lower temperature.

My thanks are due to one of my assistants, Mr. R. S. Swinton, for help in carrying out the experiments necessary for this note.

The President asked if it was pure anethol which crystallised

Mr. Umney said it was.

Mr. Lescher said that from a commercial point of view, they ought to be very grateful for this sort of paper, because the area in the east from which these seeds were drawn was enormous, and an increasing quantity was constantly coming to the London drug sales. If it were found that the essential oil was the same as the oil obtained from the south of France or different parts of Europe, our commerce with the east would be greatly developed.

The President said the odour of the two oils appeared hardly distinguishable. In this respect it was similar to the case of Japanese peppermint. This paper would tend to encourage traders who wanted to get the right thing, showing that the true oil of fennel could be obtained from the Japanese fruit. He believed no geographical origin for the fruit was laid down in the Pharmacopœia, and their friends in different parts of the world rather objected to the origin of drugs being specified, especially when they could be obtained at home.

Mr. Conroy said he noticed that the yield of oil from the Japanese fruit was 2·7 per cent. One would naturally expect the oil from these seeds would be similar to that distilled from German and other seeds, but he was not prepared for such a small yield, as he understood it was generally between three and four per cent.

Mr. Umney, in reply, said the highest fraction of the oil boiled at about 226°. Practically, pure anethol solidified at 19° C. and melted again at 20°·21° C. The yield was only 2·7 per cent., but that was when distilled on a small scale, about ½ cwt., which was

not a fair test. He had passed round a sample distilled from French seeds, of which the yield was only 3·2 per cent. He had not yet determined the botanical characteristics, but he had about eleven plants growing, and he had promised them to Mr. Holmes for examination.

Radiography.

BY LEO ATKINSON.

Medallist Royal Photographic Society.

The earliest radiographic work appeared to indicate that at the best only shadows of dense objects were likely to be obtained. This view is proved to be erroneous. "*X*-rays," in regard to their action on the sensitive salts of silver, have properties in common with ordinary light—the finest gradations of leaf venation can be defined as well as the cancellous structure of the thickest bone—the resulting picture depends on the ascertained relationship of exposure to opacity. Direct experiment proves that sheets of different metals of precisely similar thickness have a wide range of difference in the transmission of *x*-rays. This apparently capricious phenomenon is, however, not more pronounced than the well-known diathermic properties of many bodies. So far as the eye can estimate, corresponding plates of rock salt and alum are almost equally transparent, yet rock salt transmits 92 per cent. of heat rays, whilst alum transmits but 12 per cent. Liquids of apparently equal transparency vary in this respect as much as 75 per cent. Just as with thermal rays (except by direct experiment) it is impossible to predicate the opacity of any body to *x*-rays.

For the successful practice of radiography the pharmacist has special advantages in knowledge, training, and general environment. A more extended acquaintance with physics and chemistry is required from the pharmaceutical than the medical student, indeed it is exceptional, after qualification, for medical men to extend their information in either of these subjects; on the other hand it is these very subjects which form no mean part of the chemist's daily requirement: inferentially the chemist is best qualified to undertake the bulk of this important work. We may best estimate how important and extensive this is likely to become by briefly summarising the progress made in a short time.

Early in January crude shadows of coins, keys, etc. were taken through varying thicknesses of cardboard and wood; blurred images of the phalanges and metacarpal bones were obtained with exposures of from ½ to an hour. By February the thoracic and pelvic limbs were fairly depicted, and a few foreign bodies such as shot, needles or pieces of glass were successfully photographed and extracted. Since that period the advance has been rapid, the densest structures of the body have been penetrated, the nature and extent of spinal curvatures determined, fractures, dislocations, tubercular bones and old bone injuries have been clearly delineated; the track and presence of bullets, gunshot, and other injuries made evident; biliary concretions, renal calculi of varied chemical composition and morphology can be identified and differentiated with a degree of accuracy not hitherto possible by any ordinary process of prognosis or diagnosis.

Many sophistications of foods and drugs can be detected by the Röntgen photography. Hitherto, however, these results are more interesting than of real practical utility. Now, all this work has been accomplished so far without any material difference in the apparatus required, yet the exposures have been reduced one-tenth, and concurrently the definition has improved tenfold; careful experiment has swept aside many crude theories, the relationship of the forces employed is beginning to be appreciated, so that in some hands radiography is now fairly exact. In this, of course, as in other technics, the personal equation is a not unimportant factor.

For the successful practice of radiography good apparatus is a first necessity. The crux of the whole thing is a well-made Ruhmkorff coil. Unfortunately, without critical examination and testing it is not easy to assess the value of any particular coil—much depends on the method of manufacture, material employed, and whether the workmanship has been honestly performed. Without suitable knowledge and appliances for rigid testing the purchaser is at the mercy of unscrupulous manufacturers or ignerant vendors; it is not uncommon to find coils advertised of best English make on investigation turn out to be indifferent foreign manufacture. This has occurred where the vendors profess extensive experience in this class of apparatus. Imposing-looking coils break down in service in a manner quite unaccountable to the uninitiated. Cheap coils, being wound from end to end, insulation is easily broken down. A well-constructed English coil is built up in a number of sections, 20 to 100 or more, each completed section resembles a stout india-rubber band, and is separately tested during manufacture. The sections are finally connected and run on the primary. Should any section get damaged, the efficiency of the coil is simply reduced by its fractional equivalent of the total number; any damage can readily be repaired or replaced by a new section. On the other hand, to spark a cheap coil is to determine its existence. That fair results can be obtained with small coils is not questioned. Experience proves that without a certain amount of reserve force (*i.e.*, a good coil) continuity of action and reliable work is impossible.

Although much ingenuity and skill has been displayed in the manufacture of "*x*-ray or Crookes' tubes," the production of a tube giving a maximum of "*x*-rays" is still within certain limits a matter of chance—the extent of the vacuum is not the dominant factor. Tubes blown from the same glass, of equal size, having electrodes of equal weight and sealed at a determined vacuum, give very discordant results. The most reasonable theory is, that this is due to the variable quantity of occluded gas in the electrodes which makers so far cannot expel. The fact that all tubes after prolonged usage gradually become more feeble, and a few weeks' rest partially restoring them, rather tends to confirm this theory. Some of these phenomena will well repay investigation.

The electro-motive power employed will necessarily be governed by circumstances; as a rule bichromate cells are more convenient than the Grove or Bunsen battery, though not so constant. Where electrical energy is available, storage batteries have many advantages.

Direct observation by means of the cryptoscope or fluorescent screen is closely connected with radiography. Glass plates thickly coated with the platino-cyanides of barium or potash give excellent results, but a moderate sized screen will cost £3 or £4, so that for general use the price is prohibitive. Where price is no object it is not difficult to make screens enabling us to see through the human body almost as clearly as we can see through infusoria under moderate powers of the microscope. For less dense tissues calcium tungstate and the double sulphate of uranium and potash answer very well. Still there is room for improvement. A cheap, stable fluorescent salt is a real want; our resources in this direction should not be exhausted. This applies equally to other parts of the installation. There is no reason why *x*-rays should not be produced without the intervention of the cumbrous and costly appliances at present in use.

Mr. Atkinson, at the conclusion of the paper, exhibited various photographs taken by the new method, amongst which was the foot of a gentleman who had the misfortune to fall down a flight of stone steps. He had been treated for severe sprain and recovered to some extent, but latterly he suffered great pain, and having consulted the eminent surgeon, Mr. Victor Horsley, he said he could not tell the character of the injuries, and suggested that the foot should be radiographed. This was done, when it was found that one of the metatarsal bones was badly broken and as badly repaired, and three of the small bones were pulled right away from their proper articulation. It was now known what should be done, but without the aid of radiography it would have been utterly impossible to tell the nature of the injury.

Mr. Martin said he hardly knew what some of the President's predecessors would have said to a paper dealing purely with physical and natural science, but he thought they were much indebted to Mr. Atkinson for it. It showed how ready and capable the pharmacist was to be the handmaiden to medicine. This Röntgen photography was of extreme interest, but at present he believed almost its only practical application was in connection with surgery, in discovering the presence of foreign bodies, and also in showing such injuries as had just been referred to. Many people thought that they had only to get a set of apparatus in order to take radiographs, but he believed that notion was responsible for a great many disappointments. Unless a man could spend a good deal of time over the matter he would be unsuccessful. He was fortunate enough in the early days of the Röntgen rays to find amongst his assistants one who was most enthusiastic over it, and practically he had done little else since January. They had now been able to get a shadowgraph in two seconds with a 10-inch Röntgen coil working direct off a dynamo. He was glad the

author had done justice to Professor Crookes in this matter. His first connection with Röntgen photography was brought about by the fact that when the discovery was noticed in the *Times*, enquiries were made for vacuum tubes, and he happened to have a couple of Crookes' radiometer tubes which had been in stock for two years or more. They were at once tested, and found to be very active. On getting some new tubes from the same maker they were found to be of no use at all. He did not know whether in the case of the first two the vacuum had been affected through being kept so long, but probably that might be so. As Mr. Atkinson had remarked, it was utterly impossible to get anything like certainty as to the action of this apparatus, and he did not think it could be got over by any theoretical standard or any measuring of the vacuum other than an electrical one. His firm now made numbers of these tubes, and their practice was to test them electrically and seal them off at the stage when they were found most efficient. The vacuum went up and down in a very remarkable manner when in use; whether physicists could explain this he did not know, but the vacuum would certainly increase sometimes although no spark would pass, and at other times it fell so low that the tube had to be warmed before it would act. Still, as a rule, these tubes would act and last a fairly long time with a little care, not allowing them to get overheated. He thoroughly agreed with the view that the pharmacist should be to assist the physician in every direction he required, including physical and natural science as well as pharmacy.

The President said he saw last week a statement as to a theory held by Sir Gabriel Stokes that the action of these rays was due to very rapid tranverse vibrations.

Mr. Atkinson said the idea appeared to be gaining ground that these vibrations were very short, but of great rapidity.

Dr. Symes said that some years ago, when Professor Crookes' discoveries were first made known, they found, on exhausting the tube very gradually, that the effects described were really not evident at first, but as the exhaustion was continued they came to a point when the vanes rotated very rapidly, but if it were carried on still further the motion almost ceased. It seemed as if there were a point in the preparation of these tubes at which the maximum effect was produced, and it was desirable in some way to arrive at the exact amount of exhaustion necessary for getting the best results. About a month ago he visited Professor Röntgen's laboratory, and found that in his early experiments he exhausted his own tubes—they were evidently the work of an amateur—but he was not aware whether he had ascertained the exact amount of exhaustion necessary to get the best results.

Mr. Naylor suggested that the shape of the tube had also to be taken into consideration.

Mr. Atkinson, in reply, said that although a tube might be sealed off at a certain stage of exhaustion when giving off the *x*-rays, it was often found that such a tube would not be effective when brought into use. He did not think it possible to determine the exact vacuum required; the efficiency seemed to depend to a large extent on one factor which had not been properly estimated, viz., the quantity of occluded gas in the electrodes, a point which the makers of these tubes did not seem yet to have been able to deal with satisfactorily, though he had no doubt they would be able to do so in time.

The President, in moving a vote of thanks to Mr. Atkinson, said the subject had been attracting a great deal of attention recently, and was of great interest, especially as there were some points which still required scientific elucidation.

Note on the Strength of Some of the Succi.

by E. H. Farr, F.C.S., and R. Wright, F.C.S.,

Pharmaceutical Chemists.

In this note attention was drawn to the introduction of this class of preparation into use in pharmacy by the late Mr. Peter Squire, in 1835. The only recorded analyses appear to be those of Smith.* The attention of the authors was drawn to the subject by an examination of some succus conii, which had been used for the preparation of the official ointment, and was found to be practically inert. The succi examined were those of belladonna, conium, hyoscyamus, and scoparius, six samples of each being submitted to examination.

The general process followed for the determination of the alkaloids has been printed in former numbers of the *Pharmaceutical Journal*.* The alkaloids from succus conii and succus scopari were weighed as hydrochlorates. The results show that the average strength of succus belladonnæ is twice that of the Pharmacopœial tincture, while succus conii and succus hyoscyami are much weaker than the corresponding tincture.

Percentage of Alkaloids in the Official Succi Examined.

Succus	1	2	3	4	5	6	Average.	Average Commercial Tincture.
Belladonna ..	·032	·025	·010	·034	·050	—	·030	·01
*Conii	·012	·015	·032	·012	·052	·030	·027	·043
Hyoscyami ..	·005	·006	·005	·004	·006	—	·005	·01
*Scoparii	·112	·212	·114	·172	·184	·178	·162	—

* Alkaloidal hydrochlorates.

The conclusions come to are that the vegetable juices are exceedingly variable in degree of potency, and that in the interests alike of medicine and pharmacy the employment of such uncertain remedies should be discontinued.

The President said he was surprised to find that in the case of conium and hyoscyamus the succi were so weak compared with the tincture; probably the latter was made from a good dried green fruit which would no doubt have greater activity than that which was fully ripe.

Mr. Ransom said it was of great importance that any official succi should be standardised, because they must be as liable to variations as any pharmaceutical preparation. If the season were unusually wet there would be far more water in the juices than at other times, and this would account for a great deal of the variation.

Mr. J. C. Umney said he lately had an opportunity of pressing out the juice from a considerable quantity of *Aconitum napellus*, but on working it up it was found to contain practically no aconitine. On extracting the marc, however, uearly all the aconitine was recovered. This seemed to show that while the alkaloid might in some cases be soluble and come away with the juice, in many instances it was left in the marc and wasted.

Mr. Hardwick said the variability of drugs according to the season was very great; last year in the case of henbane the deficiency of alkaloid, due to want of sunlight, was very marked.

Mr. Conroy did not think the whole of the succi ought to be condemned on the evidence furnished in these tables; especially as tinctures would be found to vary quite as much. He was surprised to hear that the fluid extract prepared with 70 per cent. alcohol produced a more reliable preparation than the B.P. tincture prepared with proof spirit, and should be glad to hear any explanation of that remarkable fact.

The President suggested that we hardly as yet know enough about these alkaloids to standardise them to the extent Messrs. Farr and Wright would like. In the case of coniine chemists did not know quite to what the physiological action was due, nor indeed what were its constituents, and the same remark applied to colchicine and several other bodies.

Mr. R. Wright said he forgot to mention in connection with the former paper that he had intended to bring some kind of report as to the physiological action of conium, but on writing to Professor Cash, of Aberdeen, asking him to undertake some experiments, he found that he was unable to do so just then, though he promised he would in the approaching autumn. He hoped, therefore, at a future meeting to be able to report whether a standardised preparation of conium containing an ascertained amount of total alkaloid gave similar or dissimilar results to a solution of the alkaloid or of alkaloidal salts of the same strength.

Mr. Farr, in reply, said an important question was raised by the facts stated by Mr. Umney. The same thing occurred to a certain extent in the preparation of other juices. He knew that in the case of belladonna, hyoscyamus, and conium, the best samples of juice did not represent the full strength of the leaf, either fresh or dried. There was so much moisture present in the fresh leaf that it was evident the juice could not represent the full alkaloidal strength by a large amount. A much better preparation could be obtained really from the leaves

* *Pharm. Journ.* [3], vol. xvii., p. 835.

* *Pharm. Journ.* [3], vol. xxi., p. 859 *et sequent.*

and tops of the plant when in fruit, but before it was ripe. Such a preparation would probably be about three times the strength of the present one, but it would be not nearly so strong as one made from the fruits alone. With regard to the strength of the spirit is would appear on the face of it that the weaker spirit should do at well as the other, but for some reason or other the stronger spirit gave rather a better result, and the preparation kept better. The ordinary tincture of hemlock, and the succus too, went turbid on keeping, and there was then a strong smell given off. The addition of a little acid would set it right, but if made with a stronger spirit it did not develop to anything like the same extent. A strong smell was also given off in drying hemlock, but whether the principle to which it was due had any physiological activity he could not say; if it were thought desirable the preparation could be made from the fresh fruit with stronger spirit.

The Conference here adjourned for luncheon, and the first paper read after luncheon was the following, which was read in the absence of the author by Mr. Naylor :—

Note on Concentrated Hydrobromic Acid.

BY CHARLES T. TYRER.

Occasionally complaints have been made that concentrated acid of 1·275 specific gravity and upwards has an odour somewhat similar to that of sulphurous acid. Careful examination of the acid for sulphur compounds has been made and none found. A sample of the specific gravity of 1·640 was re-distilled until white. It was free from sulphurous acid and bromine. This acid remarkably resembled sulphurous acid in odour, but was of a more irritating nature. Acids above 1·150 specific gravity are very liable to coloration, and above 1·300 are almost certain to be coloured in a few days. Highly-coloured 1·500, however, will often be water white on dilution. Any attempt at filtration of 1·200 and above will increase coloration and will not dilute to a colourless solution, even though the very finest Swedish paper be used as the filtering medium. Acid hydrobromic of 1·250 and upwards attacks glass vessels rapidly, although the silica when once dissolved does not throw out readily on dilution to the B.P. article, but only shows its presence on neutralisation. In view of these facts, acid of the gravity 1·250 seems the highest concentration to which really reliable acid can be raised, acids of higher gravity, although water white when first sent out, rapidly changing colour and containing silica.

The President said there was a demand in commerce for an acid more concentrated than the 10 per cent. acid of the B.P., but strong acids were rather liable to attack glass.

Mr. J. C. Umney said he thought it was impossible to get an acid which would keep well and sufficiently strong of 1·250 s.g. Acid of that gravity was not equal to 30 per cent of hydrobromic acid.

The President said 40 per cent. acid had a gravity of 1·308, and a 1 to 3 dilution produced the B.P. acid. This changed colour, and became a little brownish, was rather liable to attack glass.

Mr. Naylor said he was not aware that hydrobromic acid of s.g. 1·250 did attack glass. It was well known that some glass was very much more readily attacked, and he thought it would have been well if reference had been made to the kind of glass attacked.

The President said green glass was not so readily attacked as white. It was easy to have an acid more concentrated than the 10 per cent. B.P., and there was no doubt it was in commercial demand. He would not like to say what might occur in the new Pharmacopœia, but the case of phosphoric acid was on somewhat parallel lines. The dilute phosphoric acid only was in the London Pharmacopœia, but a concentrated preparation was commercially necessary, and an official preparation with a specific gravity of 1·5 was put in the last edition. Possibly something of the same kind might be done with hydrobromic acid, but if it were found not to be stable further investigation would be required.

Note on Acid Hypophosphorous.

BY CHARLES T. TYRER.

Objection frequently has been raised to the separating out of more or less flocculent matter from this acid as sold, of the specific gravity 1·136. In the 'Year-Book of Pharmacy,' in the year 1888, p. 21, there is a note by Mr. Lunan, in which the author offers a ready mode of preparing the acid on a small scale; probably the suggestion of using the hypophosphite of calcium instead of the hypophosphite of barium, as recommended by Squire, was due to the higher price of barium hypophosphite, or, on the assumption that Mr. Lunan had tried to prepare the barium salt, the difficulty of preparing the one compared with the other, which is considerable.—Apart from this consideration, there also might have been that of the percentage of hypophosphorous acid in favour of the lime salt. In the 1880 edition of Cooley's 'Cyclopædia' vol. 2, p. 1273, the same method as Mr. Lunan's preparation of hypophosphorous acid is given. The calcium method is unsatisfactory, since, if, as in some cases, sulphuric acid is used as a precipitant, the calcium sulphate is soluble, and separation is inevitable. When, however, oxalic acid is used, the hypophosphorous acid dissolves some oxalate which gradually separates out, and even after concentration and allowing to stand, there will be separation on further standing. Submission to a freezing temperature does not seem to have any appreciable effect in separating out the dissolved oxalate. In making from the calcium salt there is considerable liability to formation of phosphate, formed during the evaporation, which still more than the oxalate dissolves in the hypophosphorous acid, and separates out, as it were, fractionally, after a time.

The United States Pharmacopœia National Formulary gives on page 1625 a method consisting of the decomposition of hypophosphite of potassium by tartaric acid, and the separation of the potassium tartrate by alcohol. This process appeared hopeful at first in the matter of subsequent separation, but considerable experience has shown the slight solubility of the potassium tartrate in dilute spirit. On the assumption that pure spirit was used, and not methylated (which would be illegal), the method is economical, since that both the spirit and the potassium tartrate could be recovered and utilised, but the solubility of the tartrate gives erroneous contents for specific gravity, which required to be 1·143 to give 30 per cent. required by the B.P.C. In this case also the tartrate is not separated completely by refrigeration. The separation takes place, not to the same extent or degree as by the calcium method, but sufficiently, at any rate, to make the acid prepared by this method unsuited for some purposes for which hypophosphorous acid is required, and to leave the objection of separation.

The preparation from barium hypophosphite is undoubtedly the best, and if the decomposition is carefully effected by sulphuric acid in dilute solution, fairly good results follow, but hypophosphorous acid appears to be capable of dissolving a small quantity of sulphate of barium, as well as silica. It may be remarked that the action of concentrated hypophosphorous acid upon glass and porcelain is far greater than that of concentrated phosphoric acid, and the separation which sometimes occurs on neutralisation is due to silica. The acid prepared from the barium hypophosphite does not throw out on long standing, and when of a specific gravity 1·137 contains 30 per cent. of real hypophosphorous acid, which is not the case with the acid prepared from potassium or calcium hyposphosphite.

One may mention incidentally attempts were made to mix hypophosphorous acid made from the calcium salt with acid made according to the U.S.P.N.F. in various proportions, in the belief that calcium tartrate would deposit, but the experiments did not result favourably.

The President said it had long been known that the preparations of hypophosphorous acid made with either oxalic acid or sulphuric acid and hypophosphite were not satisfactory. Mr. Naylor and himself devised a formula, which was given in the B.P.C. Formulary, based on the decompostion of a solution of hypophosphite of barium with sulphuric acid, and adjusting the strength to 30 per cent. of real hypophosphorous acid of the sp. gr. of 1·67. That preparation had proved useful in many ways, keeping the hypophosphites in solution, and in his experience it answered very well. It was the only English official formula for it, and he had not heard of any fault being found with it.

Mr. Naylor said he could speak as to the unsatisfactory character of the oxalic acid method. Having made a large number of experiments he could quite confirm the statement made in the paper that the oxalate constantly crystallised, but apart from that it was very difficult, if not impossible, to get the acid of 30 per cent. strength. The B.P.C. Formulary had made a provision for a mere trace of barium in the preparation.

The President said you could not use hypophosphite of

calcium with sulphuric acid on account of the quantity of calcium held in solution by such a process, and, though it was a manufacturer's process in times gone by, it yielded a preparation anything but satisfactory. The sulphate of calcium deposited.

Mr. Cross said he had found that the B.P.C. Formulary worked extremely well and produced the best syrup he had been able to make by any process.

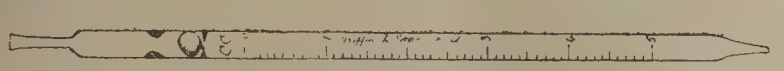
Mr. Brewis said he had found in making syrup that it was very essential to get both the hypophosphite and the acid as pure as possible, but a great deal of hypophosphorous acid was not perfectly pure. It was possible to get the substances pure, and it was worth the extra money, for a good deal of the trouble with these syrups was due to more or less impure hypophosphites and acid.

Mr. Cross added that the difficulty he had with hypophosphites was the presence of sulphates.

A Safety Pipette.

BY E. W. LUCAS, F.C.S.

For the accurate measurement of small quantities of liquids pipettes have many advantages over ordinary glass graduates. The chief drawback to their use, however, lies in the fact that if a noxious or corrosive liquid is incautiously sucked up into the mouth, disastrous results may ensue. The author, in order to overcome this difficulty, has devised an instrument which has been made for him by Messrs. Griffin and Sons, consisting of an ordinary pipette with a somewhat elongated mouth-piece, with two



constrictions about an inch apart. The upper constriction is ground smooth inside, the lower one is imperfect, while between the two is a loosely working glass plug. The action is as follows:—The pipette is placed in the liquid, which is sucked up by the mouth in the usual way. As soon as the liquid reaches the plug it is carried upwards and forced into the second constriction, into which it fits accurately. There are no delicate parts to get out of order, and as the pipette consists entirely of glass it can be safely used for measuring corrosive liquids of all kinds.

This paper was read by Mr. Naylor, in the absence of the author.

Cascarillin.

BY W. A. H. NAYLOR, F.I.C., AND R. D. LITTLEFIELD.

In 1845 M. Duval separated from cascarilla bark a principle which after purification from alcohol was white, crystalline, inodorous, and bitter to the taste. This principle he designated cascarillin. The following stages represent the main features of the process by which it was extracted. An aqueous liquor obtained by percolation of the bark in the cold was precipitated by solution of lead acetate and filtered. The filtrate after removal of the excess of lead by sulphuretted hydrogen was filtered and evaporated to two-thirds, and shaken up with animal charcoal. It was again filtered and evaporated to a thin syrupy consistence, when on cooling a brown apparently amorphous resinous substance separated. This residue was purified by reducing it to powder and treating it first and sparingly with cold spirit, specific gravity ·866, and then with boiling spirit, specific gravity ·832. By re-solution in spirit of this latter strength, decolorisation by charcoal and spontaneous evaporation, cascarillin presented the form of minute colourless prismatic needles.

In 1873 C. and E. Mylius isolated cascarillin by a process less tedious than the foregoing. They found that an aqueous extract of cascarilla, after sufficient and careful concentration, deposited a white globular substance similar in appearance to inulin. By recrystallising the substance repeatedly from alcohol, it was obtained in the form of white microscopically-small needles.

In 1882 Dr. P. E. Alessandri published a method for the extraction of the bitter principle of cascanilla "founded on the use of oxalic acid." The bark in coarse powder was macerated in a two or three per cent. solution of the acid for twelve hours with frequent agitation. The temperature of the mixture was then raised to 60° C., allowed to cool, after which the liquid was filtered and the marc well pressed. The filtrate was saturated with ammonia and evaporated to two-thirds its bulk, allowed to cool, and filtered if necessary. The bright liquid was shaken up with pure ether, and the ethereal layer was distilled so as to remove the greater part of the ether. The remaining ether was allowed to evaporate spontaneously, the result being almost pure white cascarilline.

A comparison of the properties of the respective products yielded by these processes which we have now briefly outlined challenge the common identity claimed for them. The points of difference in their alleged behaviour towards reagents between Duval's cascarillin and Alessandri's cascarilline are striking and vital. To facilitate comparison the main characteristics as determined by these two workers are placed in parallel columns.

No.	Duval's cascarillin.	Alessandri's cascarilline.
1.	White and crystalline.	White, crystallised, almos pure.
2.	Sparingly soluble in water, neutral to litmus.	Soluble in warm water.
3.	Soluble in alcohol and ether.	Very soluble in alcohol and ether, slightly soluble in benzol, chloroform, and carbon disulphide.
4.	Concentrated sulphuric acid dissolves it, and instantly becomes of a deep red colour, approaching to purple. Precipitated by the addition of a little water, the liquid assumes a grass-green colour.	Concentrated sulphuric acid colours it cherry-red, which, after a quarter of an hour, turns to a greenish-violet, and afterwards to a pure green.
5.	Hydrochloric acid dissolves it, and assumes a violet tint, which changes to blue on the addition of a little water, passing into green if much water be added.	Hydrochloric acid dissolves it, forming a rose-coloured solution, which gradually changes to purplish-red, violet, green, and sky blue, but without any addition of water.
6.	Concentrated nitric acid dissolves it. The solution which is yellow is precipitated by ammonia.	Not decomposed by nitric acid.
7.	Heated with potash it does not turn red litmus blue. It contains no nitrogen.	Heated with potash it gives off ammonia, and therefore contains nitrogen.
8.	Does not combine with bases or acids.	Forms crystallisable compounds with some of the acids. The acetate is at first pasty, but it afterwards becomes crystalline.
9.		The neutral hydrochloric solution is precipitated by :—(*a*) Tannic acid in greyish-red flocks, the supernatent liquid being violet by reflected light ; (*b*) With sodic phosphomolybdate it gives a yellowish precipitate ; (*c*) Tincture of iodine turns it turbid.
10.		Heated strongly it gives off an aromatic odour, and melts.
11.		Heated with potash it gives off ammonia.

C. and E. Mylius state that the properties of the cascarillin isolated by them were found to be identical with those of Duval's except that they did not contain the cherry coloured solution with hydrochloric acid.

It seems incredible that any chemist should have concluded from a comparison of the characters of the respective products that the two substances were identical. And yet that is the conclusion at which Alessandri arrived. "I maintain," he says, "that the cascarilline which I have obtained is identical with that of Caventou and Duval. The only discrepancy is regard to its solubility in water." It was evident to us that if the facts were correct the inference deduced from them was erraneous, and conversely if the inference were right the facts as a whole were untrustworthy. As a warranty of our assumption we note especially the statements made by Duval that his cascarillin contains no nitrogen, and that it is indifferent to bases or acids. On the other hand Alessandri affirms just the opposite, and claims that a solution of his principle is precipitated by the principal reagents which affect alkaloidal substances. Moreover throughout his paper he speaks of cascarilline as an alkaloid.

The question we have set ourselves to answer is two-fold. Is Alessandri's principle chiefly cascarillin, or is it mainly a nitrogenous principle? that is to say, a base contaminated with sufficient cascarillin to give the colour reactions. And further, how far does cascarillin—isolated by either Alessandri or Duval's method and purified—correspond in composition with the formula assigned to it by C. and E. Mylius?

For the purpose of this inquiry we have prepared a quantity of cascarillin both by Alessandri and Duval's processes respectively. The former was adopted without any modification; in working the latter evaporation was in part conducted *in vacuo*.

Duval's Principle.—After three crystallisations from alcohol it was fairly white, but it left a perceptible residue after ignition. At this stage it was reduced to fine powder, and treated by frequent agitation with chloroform. The undissolved portion was collected, dried, repeatedly crystallised from alcohol, and finally from ether, until when dried at 110° C. it had a sharp and constant melting point. When it fulfilled these conditions it melted at 203°·5 C.

Alessandri's Principle.—As obtained it was of a greyish colour, with just a suspicion of yellow. It melted at 182 to 185° C. When heated with soda-lime it evolved ammonia. A solution of it in water acidified with sulphuric or hydrochloric acid gave precipitates with solution of iodine and potassium iodide, Thresh's reagent, phosphomolybdic acid, and iodide of cadmium and potassium. It was dried over a water bath and treated with chloroform. The undissolved portion was shaken up with three times its bulk of weak spirit (specific gravity ·868). After collection and drying it was recrystallised from alcohol until when dried at 110° C. it had a constant and uniform melting point. Its melting point proved to be 203°·5 C. This higher melting-point—the highest that could be obtained—was only reached after six successive crystallisations from alcohol, which involved a loss on the original principle of nearly 50 per cent.

The pure cascarillin amounted to 2¼ parts per 1000 parts of bark. The respective products separated by the two processes when purified as described were identical, as indicated by a common melting-point and their like behaviour towards reagents. They corresponded to the characters and tests given by Duval, and negatived those of Alessandri in respect of reactions that depend upon the presence of a nitrogenous and alkaloidal substance. We are unable, therefore, to endorse the high opinion of the value of the oxalic acid process as expressed by its author when he says:—"It seems to me that such a process if used on a large scale would give good results, first, because the cascarilline obtained is almost pure, without any long and laborious process of purification being resorted to, and, secondly, because the alkaloid may be obtained in sufficiently large quantities."

The inference we draw from our results is to the effect that Alessandri's process yields a mixed product from which pure cascarilline is obtained after much labour and considerable waste of material. It should, however, in common fairness be stated that the same principle, as obtained before purification with chloroform and alcohol, is extracted with an ease and a speed greatly in excess of the lengthy and oft-repeated operations demanded by Duval's process.

Composition of Cascarillin.—C. and E. Mylius assigned to the cascarillin which they isolated and purified the formula $C_{12}H_{18}O_4$. The melting point was 205° C. On burning our substance in oxygen, which melted at 203°·5 C., we obtained the following numbers, which agree with the formula $C_{16}H_{24}O_5$.

Calculated.	Found.			
	1.	2.	3.	4.
C_{16} = 64·87	64·9	64·9	64·7	64·9
H_{24} = 8·11	8·5	—	8·3	8·4
O_5 by difference	—	—	—	—

Calculated for $C_{12}H_{18}O_4$ the numbers are:—

Carbon, 63·71; hydrogen, 7·97.

It will be observed that our figures show about 1 per cent. more of carbon than those of Mylius. We are not encouraged to believe that if our cascarillin could have been induced to melt at a higher temperature, it would have yielded a smaller percentage of carbon, for when it melted only at 198·5° C. it gave on combustion a percentage of carbon rather lower than that represented by Mylius's formula.

We have only to add the further interesting observation that when heated with zinc dust it gave a distillate allied to anthracene.

The President said cascarilla bark had been long used in medicine, but any definite principles obtained from it had not met with any demand. It was undoubtedly a valuable medicine, but was not always met with in commerce in a satisfactory condition, Whether it was sea damaged or not he could not say, but it often did not make an infusion which kept well. It was an agreeable aromatic bitter, and possessed properties which therapeutists valued exceedingly. A mixture of cascarilla with acids was considered one of the best of mild tonics, especially in cases of recovery from bronchitis and feverish cold. It was very satisfactory to have this proof that the cascarillin of Alessandri was identical with the cascarillin of Duval, but Alessandri's was not a sufficiently purified product.

Mr. J. C. Umney asked if the authors had made any experiments on the relative proportions of cascarillin in the bark and in the wood. There was very often a great deal of wood mixed with the bark, and he had recently separated a considerable quantity, but was unable to get any of the alkaloid from the wood at all. He also asked whether there were any published statements as to the properties of cascarilla being due to the essential oil or to cascarillin.

Mr. Moss said the authors had done exceedingly good work in showing that cascarillin was a body of definite formula, not a mixture of certain substances which had to be got out of the extractive of cascarilla in a more or less crystalline condition. It was known for a good many years that there was in cascarilla a bitter extractive, a volatile oil, and some aromatics, but they had not much information, and the subject did not seem to have attracted the attention of anyone who had gone systematically to work upon it until the present time. It seemed now to be proved that cascarillin was a body of definite composition, but it was still uncertain whether the medicinal activity of the bark were due to that or to the volatile oil. Possibly now the cascarillin had been separated it would be possible to ascertain whether it had any therapeutic value.

Mr. Naylor, in reply, said they had not attempted to eparate the wood from the bark in any way. As to the principle or pr.nciples to which the medicinal effect was due to he did not think that had been definitely settled as yet. He should not like any one to go away with the impression that cascarillin had not been separated before as a definite principle, but they had taken great pains and spent many weeks over this investigation in isolating this principle and purifying it. They made a number of combustions which did not appear in the paper, because they found subsequently it was clear they had not reached the point at which the body could definitely be declared to be pure. The only point of difference now between Mylius and themselves was this, that they had obtained cascarillin which melted at 1½° lower than that of Mylius, and their cascarillin yielded about 1 per cent. more of carbon than his. The real point of the paper was that Alessandri's method, which was very simple and was strongly recommended as a commercial method, was wholly untrustworthy.

Belladonna Root Powder; Separated Siftings Compared.

BY R. H. PARKER.

In separating powdered roots into portions of more or less definite degrees of fineness by means of sieves, it probably but rarely happens that the separated portions are of equal potency. The active principle may reside in the cortical portion as in ipecacuanha and senega, and if at the same time the interior be of a tough, ligneous character, the finer powder will be relatively stronger. Or when the activity is equally distributed, if the root be of starchy character, it is reasonable to assume that the bulk of this constituent will appear in the finer siftings, which will to that extent become relatively weaker.

For percolation it is often desirable that the drug should be in a definite degree of fineness, and as this is only attainable by sifting, it is obviously important to find out to what extent the potency may have been modified, unless the final product is to be standardised.

In order to decide this question in relation to belladonna root, a

sample of this drug was lightly ground and separated into "fine," "medium," and "coarse" powders by means of sieves of 60, 40, and 20 meshes to the inch. The "fine" constituted 38 per cent., the "medium" 22 per cent., and the "coarse" 40 per cent. of the original quantity ground. These three portions were separately examined under parallel conditions for moisture, alcoholic extractive, alkaloid, etc.

Moisture.—One gramme was dried at 100° C. until it ceased to lose weight.

Alcoholic Extractive.—100 grammes with 400 C.c. methylated spirit, agitated frequently during four days; the tincture filtered rapidly, and 50 C.c. evaporated and dried at 100° C. until of constant weight.

Alkaloid.—The alcoholic extractive from 50 C.c. of tincture warmed with 10 C.c. acidulated water, and estimated by Dunstan and Ransom's process ('Y.B.P.,' 1895, p. 188), and the separated alkaloid weighed, then in 10 C.c. $\frac{HCl}{20}$ and titrated with $\frac{NaHO.}{100}$

The following results were obtained :—

	Fine powder 38 °/₀ of bulk.	Medium powder 22 °/₀ of bulk.	Coarse powder 40 °/₀ of bulk.
Moisture °/₀	7·8	7·7	7·9
Alcoholic extractive °/₀	6·04	7·23	7·55
Alkaloid by weight °/₀	0·1976	0·2600	0·2616
Alkaloid by titration °/₀	0·1984	0·2592	0·2632
Sp. gravity of 1 in 4 tincture	0·8273	0·8282	0·8296
Colour of tincture	dark	pale	paler

It will be seen from these results that the finer powder gives a darker coloured alcoholic tincture, but contains less alkaloid, and that the removal of the finer portion of belladonna root powder to the extent of 40 per cent. makes the remainder of about 30 per cent. increased alkaloidal potency.

The President said it was very interesting to find that the tincture from the finer powder was of less alkaloidal strength than the other, which was the reverse of what often took place. He could understand that the coarser powder gave a greater amount of extractive, and also a greater amount of alkaloid, but he did not know that any general inference was to be drawn with regard to other drugs. It might signify that drugs should not be powdered quite so fine for the purpose of making preparations.

Mr. J. C. Umney said he had had some experience of drug grinding. It was customary, even in grinding belladonna root, of which they sometimes ground a ton at a time, to bulk the whole together after grinding, and the same process should be adopted with every other powder. In the case of capsicum, unless it were bulked in this way, the colour of the last portion would be so bad that it could not be used. In the case of belladonna it appeared to him there would be great danger in separating the different parts of the root. When Mr. Cripps read a paper on the subject at Bloomsbury Square, he called attention to the spirituous extract which had come under his observation, not where the spirit had been forced through, but where the whole percolation had been completed by spirit, and the extract separated into two portions, one of which contained about 2·5 per cent. of alkaloid, and the other 7·1 per cent. Of course, an extract of such strength, if used in making a plaister, might yield dangerous results, and probably it was some such thing which caused the blistering sometimes heard of as resulting from the use of belladonna plaster.

Mr. Naylor said the point of inquiry seemed to be this. The British Pharmacopœia frequently ordered a root or a bark to be reduced to a given powder, either No. 20, 40, or 60, and the question was, was it always well to reduce a powder say to 40; and if you did, how much of the active principle had you in the powder, and how much was left behind? Was it possible to grind a drug so as to get no dust and no fine powder, but to get the whole of it to just pass through a 30 or 40 sieve? If that were impossible the question arose, was it wise to order a definite degree of fineness at all?

Mr. Martin thought that, when a certain degree of fineness was prescribed, it meant that the whole should be reduced to that particular number, any portion which was rejected being only infinitesimal, not sufficient to seriously affect the result. Taking the three powders which had passed through Nos. 20, 40, and 60 sieves respectively, he thought possibly if the conditions had been slightly varied the percentage might have varied also, and if the whole were bulked together he did not see how the percentage of alkaloid was affected. He thought the degree of fineness specified in the Pharmacopœia depended on the character of the drug; a substance of which you could not get more than half through a certain sieve would not be ordered to be of that degree of fineness.

The President remarked that in some cases when a drug had been powdered to a certain extent, and that powder had been sifted out, there was very little left but woody fibre, and most of the medicinal activity would be in the fine powder. He thought if the ground drug were bulked and made uniform it would meet the case. In the case of chiretta the activity would be mostly in the herbaceous portion, which would powder readily, and very little in the woody fibre, which was difficult to powder.

Mr. Atkins said the point raised by Mr. Naylor was one of great practical importance. If you were using a powdered drug to make a liquid extract or fluid preparation, and only took the portion which passed through the sieve, it was quite possible that a good deal of the active principle might be left behind.

Mr. Bird always understood that when a certain degree of fineness was stated where the drug had to be passed through a sieve, the usual course when grinding on a large scale was to set aside what remained and put it in the next batch.

Mr. Druce said it might happen if the starchy matter were thrown away, because it did not powder well; in the case of digitalis, for example, a much stronger pill or powder might be given than was intended. He had noticed this kind of thing in the case of candidates at the practical examinations, and the same with infusions; a candidate who wished to be particularly careful would cut out certain portions of the leaf, but again the result would be he would give a stronger dose than was ordered. The same thing might occur with lobelia, and the result would vary with each individual worker. It could not be too much emphasised that when it was directed that a powder should pass through a sieve of a certain number, the whole of it ought to pass through.

Dr. Symes said there could be no question of the intention that the whole drug should pass through the sieve, but the difficulty was to get it to pass. It had to be dried, and it was a question sometimes whether what was gained in this way was not counterbalanced by the injury inflicted by that extra amount of drying. It was a question with him whether there was an advantage gained by drying sufficiently to pass the whole drug through, or whether a certain percentage might not be allowed to be rejected, and the powder which did go through were regarded as the standard. Uniformity was desirable, but it should be obtained if possible without injury to the drug.

Mr. Brewis said the difficulty about putting the whole drug through a sieve of a certain size was that you would get a certain percentage of powder which was much finer than the sieve. The method he adopted was to put the gruffs in the bottom of the percolator, which assisted the process, and you thus used the whole of the drug.

Mr. Abraham said the difficulty Mr. Parker pointed out occurred to him very often, and then the result obtained was not exactly what was wanted. Small makers had to do the best they could, but it was a most tedious thing to get the whole of senega through a sieve. The practical way in which he got over the difficulty was invariably to keep exactly the same amount of gruffs.

Mr. Parker, in reply, said the whole matter seemed to be sifted down to the very narrow issue which Mr. Naylor had pointed out. In the manufacture of a preparation from a crude drug it was clearly evident that the whole of a given batch must be bulked before making a given preparation, in order not to have a varied product. In the B.P. they were directed to take the product of a No. 40 powder. In the U.S.P. it was indicated that a 40 powder meant that which would pass through a 40 sieve, and would not contain much which would pass through a finer sieve. Now it was a practical impossibility, taking half a ton of belladonna root, to pass that through a 40 sieve without having at least one-third which would go through a 60, consequently that was not a No. 40 powder. That was the case he had addressed himself to. In order to produce a 40 powder it ought to be separated into two portions, and the question he asked himself was, were those two portions of the same potency? and he found they were not, consequently a manufacturer who ground a ton of belladonna root into powder must not sift that with a 60 sieve and sell that to one customer as 60, and pass the other

through a 40 sieve and sell that to another as 40, and so on with the 20. He must do the best he could to insure that what he sold to one customer must be of one bulk.

Tablet Making at the Dispensing Counter.

BY S. HARDWICK.

I have brought forward this note to show what can be done towards meeting the demand for medicines in the tablet form with a small and inexpensive apparatus sold by Messrs. Maw, Son, and Thompson, which is doubtless generally well known.

First, as regards drugs given in small doses as to bulk, as the alkaloids, arsenious acid, calomel, grey powder, podophyllin, aloin, sulphide of calcium, etc., these generally only require to be triturated with a convenient quantity of sugar of milk, and may be compressed easily. This class of tablets should be made to weigh 2 grains each, that being a suitable quantity to work in the machine. The sugar of milk used should be in crystals, and the trituration of the drug carried out without great pressure, as a very fine powder does not compress well. Should there be a tendency for the tablet to stick in the die or split, the addition of a trace of heavy paraffin oil sprayed over the powder will generally overcome the difficulty.

Another method is the addition of half a grain of cocoa powder (from which the oil has been expressed) in place of an equal quantity of sugar of milk. This greatly facilitates compression, the trace of oil preventing the tablet sticking in the mould. The formula stands—

Cocoa Powder.....	½ grain.
Sugar of Milk to	2 grains.
Medicament, as ordered.	

No difficulty is experienced in making such a powder into tablets with a blow of the hammer, the dispenser being able to turn them out with ease and certainty in not more time than would be required to make the same quantity into pills, or put it up in cachets. I have not met with any objection to the colour of the resulting tablet, while the facility of manipulation gained by the use of cocoa is a great advantage, as is also the convenience of having a general excipient applicable to a large class of tablets.

Tinctures of aconite, belladonna, digitalis, strophanthus, nux vomica, etc., may be evaporated on the sugar of milk over a water bath, cocoa powder added, and the resulting powder easily compressed in the usual way.

Tablets of extract of cascara and combinations of cascara and podophyllin are easily made, the dried and powdered extract should be used, half its weight of liquorice powder added, and a trace of heavy paraffin oil sprayed over the powder.

Other tablets requiring special notice are caffeine citrate, and may be compressed without the use of any excipient.

Grey powder, 1 grain, requires 2 grains of sugar of milk, and the addition of a trace of paraffin oil. Quinine, 1 grain, works well with the addition of 1 grain of starch, and a trace of paraffin oil.

Other tablets of this class may generally be made on these lines without difficulty, the great point being to keep the machine perfectly clean, and dust it occasinally witoh French chalk.

I have had made for me a similar machine of larger diameter, which is useful for making five or ten grain tablets. In it such salts as the bromides of potash, soda, and ammonia are easily compressed without the addition of any excipient. Salol phenacetin, and sulphonal are also easily made into tablets, but require the addition of one grain of starch to each five grains, when the resulting tablet disintegrates beautifully on the addition of water. An effervescing powder, as a mixture of citric acid and bi-carbonate of soda, is useless as an addition for producing a disintegrating tablet; at any rate in moderate quantity.

Bismuth carbonate is perhaps the most difficult to compress, but the free addition of starch and the use of paraffin oil will somewhat meet the difficulty. Bismuth carbonate and bi-carbonate of soda compress well if the mixed powders are sprayed over with paraffin.

The President said pharmacists were often called upon nowadays to prepare tablets, and the samples Mr. Hardwick had produced showed how easily the operation could be performed.

Dr. Symes said his idea was that in tablet making the best results were obtained not by concussion but by steady pressure, and a small machine of American type had been produced which effected this object very easily by means of a lever. It was very difficult to secure even pressure by a blow, and you might get the same amount of material more or less compressed. The samples shown were very nice, but he doubted if an ordinary pharmacist would be able to equal them.

Mr. Martin said the tablets shown did great credit to Mr. Hardwick. He did not much like tablets, but some medical men ordered them, and the chemist must be prepared to supply them. The Americans had devised two or three machines for this purpose, which would be found very useful. The use of chocolate and paraffin were suggestions he thought of great practical value. In preparing these articles on a large scale the great point was to get the drug in the exact condition of granulation necessary to feed properly into the machine, and it then worked perfectly.

Mr. Druce asked if these tablets would disintegrate quickly?

Mr. Rymer Young said the point raised by Dr. Symes was important with regard to the character of the article produced; unless each tabloid were separately weighed, he feared they might vary from 2 grs. to 6 or 7, and if the drug in question were of a potent character such a variation would be of serious importance.

Mr. Atkins said he should like to know how Mr. Hardwick succeeded in avoiding disintegration at an earlier stage than was desired. He should also like to hear from Dr. Symes further particulars of the machine he had mentioned.

Dr. Symes said it was an American machine; he would have one for inspection the following morning.

Mr. Toone said, without disparaging the more scientific papers, this was one which appealed to them all. He had made some thousands of tablets within the last five or six years, as there were several men in Bournemouth who ordered them, particularly a few who were in the habit of ordering calomel powders and grey powders in small doses. This was probably for two reasons, one, that the tablet was a more elegant thing to take, and, again, it was more easy to give the exact dose than in a powder. His plan was to weigh out sufficient for four tablets at once, divide them into four and then strike them. In early days they used to purchase them, but they found this was a mistake, especially as tablets were ordered which were not kept in stock by the wholesale houses, and they were, therefore, obliged to make them themselves. He first used, as Mr. Hardwick suggested, cocoa powder mixed with sugar of milk, but he found that some doctors did not like the brownish colour this gave to tablets which they expected to be white or grey. To meet that difficulty they now employed a small quantity of manna, and he found a grey powder with three-quarters of a grain of sugar of milk and a quarter of a grain of manna mixed well in a mortar weighed out into a 3-grain powder, which could be made nicely into tablets. The use of liquid paraffin had not occurred to him.

Mr. Kemp asked if Mr. Hardwick did not find that the head of the under die became spread out in such a manner by constant use as to make it difficult to get it out of the cylinder.

Mr. Hardwick, in reply, said he knew nothing about the question of pressure *v.* concussion, but he did not find the tablets varied in size or weight; he could make two dozen, and there had not been an error of more than 1 grain in the weight of the whole. The way in which he divided the powder was to prepare a small boxwood measure exactly the size required for one tablet, so that when filled and smoothed off the required weight was obtained. The addition of a little starch ensured disintegration at the required time. The sticking of the piston in the cylinder he did not think was owing to any spreading of the die, but more probably to a little want of cleanliness or slight rusting; if it were slightly oiled when put away he did not think any difficulty would arise from this cause. For dispensing purposes the cocoa formula presented great facilities, and he thought if some such easy formula, which could be readily used by small chemists, were sanctioned by the Formulary Committee, it would be a great convenience to many.

At this point the Conference adjourned until the following day.

(*Continued on page* 103.)

Creosote in Gonorrhœa.—The urethral injection of a creosote emulsion containing from 2 to 10 parts per mille has been found by Asmus an excellent remedy in gonorrhœa. In addition to its specific action on the disease, it seems to exercise an anæsthetic action on the urethral mucous membrane (*B. M. J. Epit*, 2/96/8, after *Meditzin. Obozreine*).

PHARMACEUTICAL JOURNAL.

A Weekly Record of Pharmacy and Allied Sciences.

ESTABLISHED 1841.

Circulating in the United Kingdom, France, Germany Austria, Italy, Russia, Switzerland, Canada, the United States, South America, India, Australasia, South Africa, etc.

Editorial Office: 17, BLOOMSBURY SQUARE, W.C.

Publishing and Advertising Office: 5, SERLE STREET, W.C.

LONDON: SATURDAY, AUGUST 1, 1896.

THE CONFERENCE AT LIVERPOOL.

In his presidential address at Cardiff five years ago, Mr. Martindale, after discussing the relations of the pharmacist to the public and the medical profession, proceeded to refer to services that had been and might be performed by the pharmacist. He dwelt upon the modern tendency to prepare medicines in a more definite and stable form, the extending use of proximate principles in place of galenical preparations of drugs, the prospects of standardisation, and the introduction of various lymphs as remedial agents, in addition to numerous other topics of perennial interest to the craft. It was an address by a practical man to his equally practical fellows, dealing sympathetically with all the tendencies and needs of the hour and, regarded in that light, probably served its purpose much more satisfactorily than productions of greater pretension could ever do. The address delivered on Tuesday and published in this week's Journal serves as a sequel to its precedessor, which it resembles in its general characteristics. But the flight of time has been accompanied by the rise of many new points, as well as by the appearance of newer aspects of old problems. In spite, too, of ever-flowing arguments and the persistent recurrence of formal resolutions many ancient difficulties yet remain, apparently as unmoved by the dull monotony of the one as by the lack of freshness of the other. As a good pharmacist, Mr. Martindale has again risen to the occasion, however, and interspersed his budget of sound information and practical good sense with snatches of interesting reminiscence, happily blending the past with the present and striving in some measure, by shrewd hints and wise admonitions, to prepare for and perhaps hasten the dawn of a happier future for British pharmacy.

The papers read at this year's meeting were not lacking in number or variety, and if also they have not contributed in any remarkable degree to our stock of knowledge, their generally light character may perhaps be regarded as according better with the essentially social nature of the gathering than complete and convincing monographs could do. Physiological, manufacturing, and analytical chemistry received their fair share of attention, whilst pharmacy and economic botany were rightly very prominent, and radiography was not forgotten. Farr and Wright have given further evidence of their capacity for careful and painstaking work by their communications on the pharmacy of hemlock and the strength of some medicinal plant juices, whilst the latter has also found time to work out a practical formula for a somewhat unsatisfactory preparation—liquor auri et arsenii bromatus. The effect of solvents on the analytical characters of ginger was described by J. F. Liverseege; a useful formula for essence of rennet was contributed by J. A. Forret; cascarillin is shown by Naylor and Littlefield to be a somewhat puzzling body; whilst J. C. Umney is more at home in dealing with the oils of fennel and peppermint. Another pharmaceutical problem appears to have been solved by A. C. Abraham, by his work on bael and its fluid extract; F. C. J. Bird has shown the value to pharmacists of formaldehyde as a preservative; A. H. Allen discussed the white wine vinegar question, besides contributing a paper on condensed milk; and R. H. Parker stated the results obtained by comparing separated siftings of belladonna root powder. One of the most prolific authors on this occasion was C. T. Tyrer, who contributed notes on concentrated hydrobromic and hypophosphorus acids, and on pyroxylin, B.P. Minor contributions were the notes on potassa sulphurata, cotton-seed oil, and the pronunciation of the word "pharmacognosy," by W. Elborne; one on Chinese opium, by F. Browne; another on the composition of diphtheria antitoxin serum, by Dr. Gordon Sharp; and a description of a safety pipette, by E. W. Lucas. Finally the importance and advantage of tablet making at the dispensing counter were clearly stated by S. Hardwicke, and a most attractive and well-delivered paper, by an expert at his subject, was that on radiography, by Leo Atkinson.

Turning to the prospects of the Conference, they can hardly be considered as being much rosier than during the last few somewhat depressing years. Yet there is manifested a strong disinclination to allow the body to fall into decay, though it is not quite clear at the present time how that result is to be averted. Perhaps the healthiest sign of this unwillingness to let the Conference vanish into the obscurity of recollection is the increasing tendency to make the most of the social features of the annual gatherings, and it may be that by developing this feeling and curtailing the more serious business which now nominally constitutes the chief reason for the existence of this separate pharmaceutical organisation, its continuance may be ensured. For the present, however, it must be conceded that the Conference, though temporarily weak perhaps, is not in a morbid condition. The second Liverpool meeting has been a great success—owing greatly to the efforts of the local pharmacists and especially to the indefatigable local secretary, Mr. T. H. Wardleworth. With Dr. Symes as President, Mr. Anderson Russell as local secretary, and Glasgow as the scene of action, equal success will doubtless be assured next year. But whatever the commercial metropolis of Scotland may do for its guests, and however it may vie with its rival for the second place in the rank of British cities, it will be impossible for it or any other place to improve upon the excellent arrangements or gracious and profuse hospitality now for a second time in the history of the Conference associated with the name of the great city upon the Mersey. The pharmacists of Liverpool have ever deserved the sympathy of their fellows for the harmonious manner in which they pull together for the common good,

and to this, no doubt, must be attributed such gratifying results as seem natural when they act as hosts. Probably no greater good could follow this latest revelation of the strength that attends upon union than that pharmacists from other cities, towns, and villages in Great Britain should depart with a firm determination to emulate what they have seen so well exemplified.

ANOTHER PRESENTATION TO MR. CARTEIGHE.

A gratifying incident, the fitness of which will commend itself to the whole body of British pharmacists, served as a pleasing interlude during the social and business meetings at Liverpool this week. It will be remembered that a short time ago a resolution was passed by the Executive of the North British Branch of the Pharmaceutical Society, conveying to Mr. Michael Carteighe an assurance of the esteem in which he is held by pharmacists in Scotland, and expressing their strong sense of the value of the services rendered by him to pharmacy during his fourteen years' tenure of office as President of the Society. It was considered desirable that an opportunity should be found for communicating this resolution to Mr. Carteighe personally, and such an opportunity occurred at the Adelphi Hotel, Liverpool, on Tuesday last, during the luncheon interval between the sessions of the British Pharmaceutical Conference. At a small and informal meeting, Mr. Laidlaw Ewing, Chairman of the Executive, who was supported by the Vice-chairman, Mr. W. L. Currie, and several other members of the Executive, presented to Mr. Carteighe a handsomely illuminated address, embodying the terms of the resolution, which read as follows :—

"That this Executive desires to place on record an expression of its indebtedness to Mr. Michael Carteighe for his services as President, and of its high appreciation of the unselfish and earnest efforts he has successfully made to advance the interests of the Society, and promote loyalty to one another, and a cordial feeling of unity and sympathy among pharmacists, both north and south of the Tweed."

In a brief, but sympathetic and laudatory speech, Mr. Ewing referred to Mr. Carteighe's services to the Pharmaceutical Society and British pharmacy generally, during a long term of years, and Mr. Currie added his testimony, as representing the pharmacists of the West of Scotland. Mr. Carteighe, who was much moved and found considerable difficulty for a few moments in controlling his voice, contented himself with simply thanking his northern friends for this renewed expression of their gratitude and esteem, and reiterating his intention of continuing his efforts on behalf of pharmacy.

THE ROYAL BOTANIC GARDEN, CALCUTTA.

The 109th annual report of the Royal Botanic Garden, Calcutta, that for the year 1895-96, has recently been submitted to the Government of Bengal, by the Superintendent of the Garden, Brigade-Surgeon Lieut-Col. George King, M.B., LL.D., F.L.S., F.R.S., C.I.E. Considerable attention has been given as usual during the year to the cultivation and distribution of plants of economic interest and value. Few of direct pharmaceutical or pharmacological importance are immediately under trial. *Strophanthus dichotomus* is understood to be under observation, and coca is still occasionally issued for experimental cultivation. The introduction of the kino-bearing *Pterocarpus* into Bengal is one hopeful direction in which the resources of the garden might be turned to much account.

The collection in the herbarium has been increased by more than 17,000 specimens, the chief contributors being the Director of the Royal Garden, Kew, and the Keeper of the Botanical Department of the Natural History Museum, London, besides other noted botanists and botanical institutions in various parts of the world, while 11,093 carefully-named specimens of Indian plants were issued to various scientific institutions all over the world. The chief recipients of the latter were Kew and the British Museum, the University Herbaria at Edinburgh, Aberdeen, Cambridge, Berlin, Zurich, Florence, Vienna, Utrecht, Leiden, Upsala, and Melbourne, and other notable collections.

Among other valuable contributions to botanical literature which Dr. King and his colleagues have made during the year is the first part of the fifth volume of the 'Annals of the Calcutta Botanic Garden.' This part is occupied by detailed descriptions and figures of a hundred species of new and little-known Indian orchids by "the illustrious and veteran botanist, Sir Joseph D. Hooker, who has been engaged for the past five-and-twenty years in the preparation of a 'Flora of British India.'" "In the course of his elaboration of the family of Orchidaceæ," Dr. King continues, "for that monumental work, he had at his disposal the whole of the materials of the Calcutta Herbarium, including the coloured drawings made by the garden artists. These drawings, which have been accumulating since nearly the beginning of the century, were found by Sir Joseph so useful that he recommended the publication of a selection of them, and generously undertook to supply the descriptions himself. The result is his 'Century of Indian Orchids,' which forms the first part of the fifth volume of our Annals." To this work is prefaced a memoir of William Roxburgh, first Superintendent of the Garden, from the pen of Dr. King. Part 2 of volume V. is devoted to "A Century of New and Rare Indian Plants." The sixth volume of these Annals has also since appeared, and is occupied by an account of a very important research by Dr. D. D. Cunningham, F.R.S., Professor of Physiology in the Medical College, Calcutta, entitled "The Causes of Fluctuations in Turgescence in the Motor Organs of Leaves"; the result of which has been to prove that the great majority, if not all, of the transient spontaneous movements (sleep, sensibility, and the like) of the higher vegetable organisms are dependent on purely physicial processes. Volume VII. of the Annals, published since the date of the report, is an account of the bamboos of British India, and an elaborate work which Dr. King has in preparation 'The Orchids of Sikkim,' will in all probability form volume VIII. These splendid volumes, in quarto, are illustrated in a high degree of perfection, with plates, drawn, lithographed, and coloured by hand within the Herbarium building, by the Bengali artists attached to the staff. Dr. King has an able deputy in Surgeon-Captain David Prain, M.B., F.R.S.E., who is curator of the Herbarium, and is also Professor of Botany in the Calcutta Medical College. The Government Cinchona Plantation in British Sikkim is also under the administration of Dr. King.

ANNOTATIONS.

Death of a Co-Worker with Bell.—By the death of Mr. Charles Davidson, of Forresterhill, on Sunday last, British pharmacy loses another of its personal connecting links with Jacob Bell, whose co-worker he was in firmly establishing the Pharmaceutical Society. Bell stayed with him for a time whilst actively engaged as the apostle of union, and Mr. Davidson was able to induce the whole of the Aberdeen pharmacists of that day to join the Society in a body. He was identified with the business life of the far northern city for more than half a century. Retiring a considerable time ago, he spent his declining years at Forresterhill, where he devoted himself to books and gardening. He had reached his eighty-fourth year, and retained his mental faculties to the last.

On Mercurous Nitrite.—A Bengali chemist—Dr. P. C. Ray, D.Sc., Edin., Junior Professor of Chemistry in the Presidency College, Calcutta, and Chemist to a Native pharmaceutical concern—has discovered that the yellow crystalline deposit sometimes produced in the preparation of mercurous nitrate by the action of dilute nitric acid in the cold on mercury is mercurous nitrite, $Hg_2(NO_2)_2$, regarding which he has contributed a memoir to the Journal of the Asiatic Society of Bengal. The interesting compound is not included by Roscoe and Schlorlemner in their well-known treatise, nor is there any reference to it to be found in the latest edition of Watts' 'Dictionary of Chemistry.' To prepare it, yellow nitric acid of sp. gr. 1·410 is diluted with water in the proportion of 1 to 3, in a flask or beaker. A large excess of mercury is at once poured into the liquid; the heat of the solution of the acid in water helps to start the reaction: a gentle effervescence of gases takes place, and, in the course of about an hour, yellow needles, resembling prismatic sulphur, begin to appear on the surface of the mercury. After a few hours the liquid, together with the mercury, is carefully decanted off, and the salt shaken out of the vessel over porous tiles. The compound is important as throwing additional light on the action of nitric acid on the copper-mercury group of metals, and as supporting the now well-established theory that "in their relation to nitric acid, metals must be divided into two classes"—those which produce ammonia and hydroxylamine from the acid, viz., tin, zinc, cadmium, iron, aluminium, potassium—and those which seem to enter into direct union with the nitrogen of the acid instead of displacing its hydrogen—copper, silver, mercury and bismuth. Dr. Ray assumes that the place of mercury in the Periodic System would naturally justify the expectation that it would yield the analogue of silver nitrite, and that the present compound is a realisation of that. The different mercurous nitrites and nitrates and mercuric nitrite, as also an attempt to prepare nitro-ethane with the aid of the compound now described, is understood to be under investigation by the same chemist.

The Röntgen Rays.—According to the *Standard*, Dr. Scharwald, of Freiburg in Baden, by confining the halogen elements in lead-free test tubes, and arranging the latter in a circle with their lower ends in the centre, has found that chlorine, bromine, and iodine in a pure state are by no means easily penetrated by the Röntgen rays, but that this fact is not a consequence of the grouping of the atoms in the molecule, but depends on the atom of the haloids. From this it follows that all chemical combinations of the halogens are impenetrable by the Röntgen rays in proportion to their halogenic percentage. It is suggested that one consequence of this is that the Röntgen rays may be the means of making a limited qualitative and even quantitative chemical analysis of such combinations, and will prove a sure and easy means of detecting various adulterations. Dr. Scharwald has also discovered that the shadows of the soft parts of animal bodies are produced partly by the iron contained in hæmoglobin and in the alkaline metals, and especially by the chlorine the soft parts contain, and that muriatic acid, chloroform, liquid chloride of carbon, and especially liquid bromoform, all free from water, are, owing to their large halogenic contents, almost absolutely impenetrable to the Röntgen rays, and therefore act as a filter to such rays. The four most important elements, on the other hand—carbon, hydrogen, oxygen, and nitrogen—are almost absolutely penetrable to the Röntgen rays. At the Health Congress, held in Glasgow last week, Professor Ramsay stated that one of his friends who had been in the habit of exhibiting the bones of his left hand freely to admiring spectators under the Röntgen rays, had in consequence shed all the finger nails of that hand.

Congress of Chemistry at Paris.—On Monday the second congress of chemistry as applied to medicine and industry was opened at the Sorbonne, Paris, the president being M. Berthelot. Representatives of all quarters of the globe were present, and of the 1597 members who attended, 995 were French. In his opening address M. Berthelot spoke of the importance of the study of theory, urging that pure doctrine was the necessary road to useful results, and that practice would follow fast on the tracks of theory. No science requires such a close connection between theory and practice as chemistry. Chemical synthesis is becoming the great creator, and, after giving to the world colouring matters, perfumes, and medicaments, is now being extended to aliments.

International Catalogue Conference.—As a result of this conference it has been decided that it is desirable to compile and publish by means of some international organisation a complete catalogue of scientific literature, arranged according to subject matter, and to authors' names. It is proposed to entrust the administration of the catalogue to an international council, and the final editing and publication to a central international bureau, under the direction of the council. The catalogue is to comprise all published original contributions to any of the mathematical, physical, and natural sciences, but not the "applied" sciences, whether appearing in periodicals or the publications of societies, or as independent pamphlets, memoirs or books. English is to be the language of the catalogue, and it is to be left to a committee of the Royal Society to suggest such details as will render the catalogue of the greatest possible use to those unfamiliar with English. January 1, 1900, is the date fixed for beginning the catalogue.

Hospital Dispensers and their Apprentices.—A rather interesting point was raised at a recent meeting of the New South Wales Pharmacy Board, as to whether hospital dispensers should be allowed to take apprentices, the question having arisen through the dispenser at the Sydney Hospital having asked for information on the subject. After careful consideration the majority decided against the practice being admitted, basing their conclusions upon the wording of the rules of the Pharmacy Board drawn up in 1891, which distinctly state that all candidates for the qualifying examination must have been apprenticed to chemists keeping open shop. These regulations are directly opposed to the Poisons Act of 1876, according to which the practice in question would have been quite allowable, since no stipulation is there made that the pharmacist should keep open shop.

The Sale of Dangerous Drugs.—A letter has recently been sent to the Liverpool Coroner, in which the writer strongly protests against the facility with which poisonous drugs and chemicals, and especially those which are used to procure abortion, appear to be obtained by the general public. In the course of his remarks, he states that the use of the latter preparations is increasing at an alarming rate, and he urges that their sale should be placed solely in the hands of registered chemists, who should be empowered to sell them only with the written authority of a registered medical practitioner. In view of the possibility of a few chemists objecting to these restrictions, the correspondent remarks that in other countries no medical prescription containing a dangerous or poisonous drug can be re-dispensed except by the authority of the prescriber. He concludes by expressing the wish that the matter should be taken up by the Society of Coroners, the Pharmaceutical Council, the local Medical Society, and the Liverpool Chemists Association, so that a practical conclusion may be arrived at.

Dangerous Fodder.—The following interesting note appears in *Natural Science* for July: The intestinal calculi and hair balls of horses and cattle are well known, but Mr. F. V. Coville, of the U.S. Department of Agriculture, has recently called attention to a new source of trouble in the hairs of the calyx of the crimson clover, *Trifolium incarnatum*. Up to the time of flowering these hairs are soft and flexible, but they afterwards become stiff and almost needle-like in character. If hay made from over-ripe clover is fed to cattle, these hairs, which are barbed, form balls of a tough, felt-like consistency, three or four inches in diameter, which ultimately cause death through peritonitis or some related ailment. The first deaths from this cause in the United States were noted in 1895, and farmers are cautioned against allowing this clover to become too ripe before making it into hay. The tops of the spineless cactus, *Anhalonium Lewini*, of Southern Texas, which contain an active poison, serve as articles of trade among the Indians, who use them as an intoxicant or stimulant during their dances or religious ceremonies.

The Relative Strength of Diphtheria Antitoxic Serums.—The recently published report of the Special Commissioners appointed by the *Lancet* to investigate the therapeutic action of the different makers of English and foreign serums has naturally caused much interest, and the correspondence columns of last week's issue of that journal contain letters from Dr. I. J. Bokenham and Messrs. Burroughs, Wellcome and Co. bearing on the subject. The former gentleman has had the sole control of the bacteriological laboratories of this firm for two years, and he consequently takes the responsibility for the quality of the preparations. In the course of his remarks he points out that the methods adopted by the director of the Institut Séro-Thérapique, Bruxelles, and himself are in every respect identical. Both have employed the same cultures for producing the toxines, the same culture media, and have actually employed on more than one occasion toxines prepared by one another, whilst for some months the same standard has been used by them in test experiments. The gravity of the discrepancies between Dr. Bokenham's result and that published by the *Lancet* is, therefore, remarkable, and he suggests that the whole matter should be thrashed out by them in conjunction with some recognised authority on such questions. Messrs. Burroughs, Wellcome and Co.'s letter is couched in the same strain, and they are naturally anxious to find out how the *Lancet* results differ in many cases from those of the makers, and also to establish some definite method for securing permanently a standard strength under the control of a central authority. The further developments of the questions at issue promise to be interesting.

PARLIAMENTARY NOTES AND NEWS.

London University Commission Bill.—There seems to be a remote possibility of this Bill becoming law this Session after all, providing the objectors confine themselves to manifestoes. On the 27th instant it passed through Committee of the House of Lords without amendment, was reported, and is, as we go to press, up for reading a third time. But will the objectors remain quiescent? The Bishop of London has already put down an amendment in the cause of religious tolerance, but that is not a serious matter. If the dissatisfied minority of the Convocation can induce one Member of the Commons to "block" the measure, its doom is sealed. The chances are of course largely in favour of the "block," for there are 670 Commoners, and their inclinations are not all educational, nor their interests academical. The Duke of Devonshire, in moving the second reading, referred to the "University Defence Committee" and the "Gresham Commissioners Scheme Amendment Committee," and showed an intimate acquaintance with the arguments advanced in "the case against the London University Bill" formulated by those Committees. But he rather diplomatically urged that the arguments did not establish any reason why the Bill should not be read a second time. There were certain points which might be worth the attention of the Statutory Commissioners, and no doubt they would be considered. After a personal explanation and repudiation of certain half-truths contained in the manifesto issued by the objectors, the Lord President of the Council announced that Lord Davey had expressed his willingness to accept the position of Chairman of the Commissioners. Lord Herschell, as Chancellor of the London University, made a brilliant speech in defence of the Senate and in favour of the Bill, demolishing the arguments of the objectors in that crisp and forcible manner so characteristic of him. Earl Cowper, who, as Chairman of the first Commission, had some authority to speak on the subject, confessed that the Gresham scheme of two universities was his first love, but it appears that he is now quite orthodox, having been converted by the influential majority who were utterly opposed to having a teaching and an examining university existing side by side yet mutually independent. The noble Earl was followed by Lord Playfair, who may be called the joint author of the Bill, seeing that it was modelled on the measure he introduced last session. He pointed out that London was the only large town which did not possess an organised teaching university—a condition of things which seemed to him disgraceful. He pointed the moral and adorned the tale by reference to Renan's dictum concerning Sedan and German science. Incidentally, too, he said a word for experimental science and research in chemistry and physics. This was only to be expected from a scientist of Lord Playfair's standing and an honorary member of the Pharmaceutical Society.

The Select Committee on the Companies Bill has reported and practically dissolved. The report consists of some half a dozen lines conveying the bald statement that the Committee met several times and examined several witnesses, but had been unable to complete the inquiry. It therefore recommends that if the Bill is again introduced into the House, the Select Committee should be re-appointed. The Bill is now "awaiting commitment," which, being interpreted, must be regarded as equivalent to saying that it will follow the other ministerial failures into the overflowing parliamentary dust-bin. The reason for this sudden adjournment of the Committee is variously attributed to the fine weather, the unorthodox tendency of the evidence, and a growing sense of the difficulties which beset legislative intervention with established commercial methods. Perhaps each consideration has contributed a little to the result. It is to be hoped, however, that the Bill will be re-introduced next session, and that the Committee will then resume its labours. There remain many points in company law for careful consideration, and Lord Herschell's important amendment prohibiting the use of personal professional titles by companies has yet to receive attention—and it merits a good deal.

Sir Albert Rollitt has taken time by the forelock in respect to the Merchandise Marks question, and has placed on the paper for next Session a notice that he intends to call attention to the operation of the Merchandise Marks Acts, and to move for a select committee of enquiry. If the principle "first come, first served" operates at St. Stephens, the member for South Islington has a glorious chance of securing attention.

BRITISH PHARMACEUTICAL CONFERENCE.

Sessions of Conference.

(*Continued from page* 98.)

SECOND DAY'S BUSINESS.

The Conference resumed at 10 o'clock on Wednesday, July 29.

The PRESIDENT read a letter he had received from Mr. Benger, of Manchester, expressing his disappointment at not being able to be present as he had hoped.

THE EFFECTS OF CLIMATE AND SOIL ON OILS OF PEPPERMINT.

BY JOHN C. UMNEY.

In the discussion following the paper on black and white peppermint oils read at an Evening Meeting of the Pharmaceutial Society in February, 1896 (*Ph. J.*, lv., 11, 123), I stated that I was in correspondence with distillers in the United States with a view to ascertain the varieties chiefly cultivated there and to determine the effect of climate and soil on the essential oil of plants of the same varieties cultivated in different countries.

It will be remembered that the principal difference found between black and white Mitcham (England) oils was in the proportion of esters of menthol present, the latter being as high as 14 per cent., whilst the former usually does not exceed 7 per cent. I have since had the opportunity of confirming these ester percentages in other samples, and although they may be to some extent modified by the method of distillation, they appear to be distinctly characteristic of the two varieties. I have not succeeded in obtaining an authentic sample of oil distilled from white peppermint in the United States, but I have obtained samples of oil distilled from plants grown in America from black Mitcham roots and Japanese roots respectively. The samples of oil distilled in the United States from black Mitcham plants vary in ester percentage somewhat, but the ester percentage in the Wayne county is in each instance higher than the Michigan—the other figures showing but slight variation.

Oils distilled from Black Peppermint (*Mentha piperita*).

Grown in	Sp. gr. at 15° C.	Optical rotation in a tube of 100 M.m.	Menthol as ester.	Total menthol.	U.S.P. colour reaction, 2 C.c. of oil with 1 C c. glacial acetic acid and one drop nitric acid.
			p. c.	p. c.	
Surrey (Mitcham) ..	·9036	−25·5	3·7	63·1	Light blue.
Lincolnshire (Market Deeping)	·9072	−28·5	5 0	62·7	Light blue.
Michigan, South ..	·9095	−31·0	8·2	71·0	Blue with copper fluorescence.
Michigan, North ..	·906	−30·0	8·1	63·0	Blue with copper fluorescence.
Wayne Co., N.Y.. ..	9095	−27°	10·8	59·1	Intense bluish-violet with copper fluorescence.
,, ,, ,, ...	·908	−26·5	12 2	58·4	Very intense bluish-violet with magnificent copper fluorescence.

The ester percentages of the American oils are higher than usually found in black peppermint oil from plants cultivated in this country, but the physical characters and total menthol are very similar. The plants grown from Japanese roots (*Mentha arvensis* var. *piperascens*) are much cultivated on account of the larger proportion of oil they yield per acre. The specific gravity from ·902 to ·905, and the percentage of esters of menthol present are low, one sample yielding only 2·5 per cent., the lowest ester per cent. I have obtained in any peppermint oil.

Oils distilled from Japanese Peppermint (Mentha arvensis *var.* piperascens).

Grown in	Sp. gr. at 15° C.	Optical rotation in a tube of 100 M.m.	Menthol as ester.	Total menthol.	U.S.P. colour reaction, 2 C.c. of oil with 1 C c. glacial acetic acid and one drop nitric acid.
			P.c.	P.c.	
Michigan, U.S.A.	·9027	−27·8	2·5	66·0	Pale violet tinge on standing.
Michigan, U.S.A.	·904	28 5	3 1	68·4	Ditto.
Kent (England) ..	Insufficient for determination				Pale violet coloration.
Japan (normal) ..	·9062	−35·25	5 8	70·6	Violet coloration.
Japan (normal) ..	·902	−39	2·8	72·2	Pale violet coloration.

In the paper previously referred to mention was made of the U.S.P. colour reactions for peppermint oils, as affording striking differences between oils of high and low ester value—taking the white Mitcham oils as the one extreme and Japanese oil as the other extreme—and it has been noticed in continuing the examination of these freshly distilled oils that the intensity of the coloration produced by acids follows the ester percentage without exception. The colour reactions of peppermint oil with various acids was first noticed by Flückiger (*Ph. J.* [3], i., 682) and was subsequently the subject of considerable experiment by Frebault (*Ph. J.* [3], iv., 978), who regarded the reaction as dependent upon the colouring matter contained in the oil of peppermint—a comparison being instituted between the behaviour of these bodies and chlorophyll under similar conditions. Roucher stated (*P. L.* [3], v., 393) that the reaction was not due to menthol, and Flückiger and Power ('Year-Book' 1880, p. 469) suggested that the colour might be due to substances combining with alkaline bisulphites. More recently Polenske has investigated the matter, coming to the conclusion that the reaction is probably due to phyllocyanin.

It was shown in the paper on black and white peppermint oils already referred to that after the removal of the esters from white oil the colour reactions with acid were much less intense, and experiment also shows that the view of Flückiger and Power, that it is dependent upon aldehydic bodies, is incorrect, as oils give nearly as intense colour reaction after treatment with acid sulphite of sodium as before. Moreover, after reduction with zinc dust, intense colour reactions can still be obtained with acids. In order to determine whether the condition of the herbs for distillation rather than the different varieties causes the differences in these reactions, I have distilled a small quantity of fresh Japanese peppermint (*Mentha arvensis* var. *piperascens*) grown at Sevenoaks, and kindly given me by Mr. Holmes, and the behaviour of this oil with nitric acid in glacial acetic acid solution is precisely the same as in the oils distilled from the same species grown in Japan and America, the palest violet coloration being produced. It seems unquestionable, therefore, that this very slight colour reaction may be considered as typical of oils of Japanese peppermint (*M. arvensis* var. *piperascens*). It is also curious that if the reaction be due to phyllocyamin, that this body should be obtained in larger quantity from both varieties of *Mentha piperita* than *M. arvensis* var. *piperascens*. It should be noted also in this connection that, by repeated distillation of the oil under reduced pressure, the intensity of these reactions is not diminished.

From the results above recorded it seems possible that the oil produced in America from Mitcham black peppermint plants is slightly modified, and in certain districts the ester percentage materially increased. The higher ester value of French than English lavender oils has been discussed in my paper on essential oils (*Ph. J.* [3], xxv., 980), and the opinion expressed that ester determination may be taken as a basis of comparison of oils of the same type. The softness of the French lavender oil compares with the pungency of English oil much as does a high ester white Mitcham peppermint oil with a black Mitcham oil, or more markedly still a Japanese oil. It is unlikely that the higher ester percentage of many Wayne Co. as compared with Michigan and other American oils is due solely to superior methods of distillation.

It is unfortunate that the American oil so frequently contains spearmint and erigeron oils, as they depreciate considerably the value, even though the menthol and menthol ester percentage are high. The difference in climate and soil appears to effect but little alteration in the oil distilled from plants grown in England

and America from Japanese roots, the total menthol percentage being only slightly reduced. I am indebted to Mr. Hartford, of New York, for samples of various American oils and plants, and also to Mr. T. Christy, for peppermint plants of the different varieties.

The President, in thanking Mr. Umney for his paper, said the examination of essential oils was becoming daily of greater importance.

Mr. Moss regretted that he had recently disposed of some oil made from plants grown in his own garden, as it might have been useful to Mr. Umney in his investigations. The difference in the proportion of esters in black and white peppermints no doubt arose from the different methods of cultivation and the district in which it was grown. When Mr. Umney read his paper on the analysis of oils of peppermint, it was suggested that the conditions under which the proportion might be increased was worthy of examination with the view of improving the quality of the oil now obtained from black peppermint. He (Mr. Moss) did not gather that Mr. Umney had given special attention to this point. The distinction between oils obtained from Japan and English peppermint was also worthy of attention. If it were possible to distinguish, for example, not merely Japan from American peppermint, but a mixture of Japan with American by means of the test suggested by Mr. Umney, a great point would be gained.

Mr. Peter McEwan said this paper was equal in importance to the one previously contributed by the author on Mitcham peppermint oil. It was then suggested by Mr. Holmes that the effect of different soil and climate on Mitcham plants might be advantageously studied by Mr. Umney, and they were much indebted to him for the great trouble he had taken to secure samples from the United States. The most startling fact brought out appeared to be this: one of the greatest difficulties of English peppermint growers was to prevent the white mint reverting back to the black; but it now appeared that the effect of growing black Mitcham peppermint in Michigan and Wayne County was to bring it practically to the white. The figures showed that the oil distilled from such plants was very similar in character to the white oil grown at Mitcham. There was still a great deal behind this subject which one could only get to know by becoming an American oil distiller, but Mr. Umney had taken it as far as was practically possible.

The President said the one important factor in producing the fine flavour of English peppermint was the care bestowed on the growth of the plant and the distillation of the oil at Mitcham, Hitchin, and elsewhere. This article still kept its value, and Mr. Umney had thrown a great deal of light on the causes of that high value. The menthol esters present in these samples showed that some of the American oil came very high.

Mr. Umney, in reply, said it was not possible to distinguish by this test the presence of a small quantity of Japanese oil. There was no doubt the great superiority of English peppermint oil was due to the care taken in the cultivation. He had recently been over at least 100 acres of peppermint at Mitcham, and there was not a weed to be seen in it. At any rate, the price commanded by the best English oil was between five and six times that of the American.

On White Wine Vinegar.

BY ALFRED H. ALLEN.

The perversion of words from their original meaning often troubles the philologist, especially if he be one of those inclined to appeal on every occasion to the origin of the word for an interpretation of its present signification. The perversion of the original meaning of the words "prevent" and "geometry" are notable instances of this change in signification; but that of "vinegar" is a still more curious instance. As the word "vinegar" is derived from *vin aigre*, which literally means "sour wine," it is glaring tautology to speak of "white wine vinegar," since such a term can only mean "white wine sour wine."

But we all know that vinegar is defined "by authority" to be "an acid liquid, prepared from a mixture of malted and unmalted grain by the acetous fermentation," though the sponsor for this description has since sought to extend the meaning of the term so as to include any liquid of which acetic acid is the most tangible constituent. This modified view of the nature of vinegar has not met with general acceptance, either by analysts or judicial functionaries, the definition meeting with the widest approval being that vinegar is an acid liquid produced by the alcoholic and acetous fermentations of a vegetable juice or infusion. This description includes vinegars prepared from malt, wine, raisins, cider, etc.; but excludes acetic acid produced by the distillation of wood. Where it is desired to define the nature and origin of the vinegar more clearly it is easy to describe it as "malt vinegar," "wine vinegar," "sugar vinegar," "cider vinegar," etc. The term "white wine vinegar" appears to me to be merely a more precise description of the nature of the vinegar, as it clearly points to its origin in the wine from white grapes.

To call dilute acetic acid "white-wine vinegar" appears to me illogical, and the practice is one to be deprecated, on the ground that, as far as possible, every article should be called by its right name. Of course I am well aware that dilute acetic acid has almost acquired a prescriptive right to be so miscalled, and the purchasers would probably be dissatisfied if they were supplied with the real article. Still, the ordinary practice has not the sanction of universal custom, since some of the leading dealers always supply real white wine vinegar when asked for it.

The following are analyses of two samples of the real article purchased retail in a town in the Midland counties:—

Parts per 100 measures.	A.	B.
Acetic acid	6·37	6·49
Extractive matters	1·42	1·55
containing mineral matters	0·28	0·30
with alkali (K_2O)	0·046	0·046

Two other samples obtained direct from the importers, and which I believe to be specimens of genuine white wine vinegar, showed on analysis:—

		C.	D.
Specific Gravity		1·0197	1·0211
Parts by weight per 100 measures.			
Acetic Acid		7·98	7·78
Extractive matters.	Albuminous matters	0·10	0·19
	Carbohydrates, etc.	1·65	1·65
	Mineral matters	0·20	0·53
	containing phosphoric acid	trace	0·065

Genuine wine vinegar always contains a notable quantity of acid potassium tartrate, which is not present in vinegar from other sources.

The following samples were procured by retail purchase from pharmacists in Midland towns, "half-a-pint of white wine vinegar" being asked for in each case. The results show that dilute acetic acid, sometimes coloured a pale yellow, was supplied in each case. The price paid varied from 1½*d.* to 4*d.* per half-pint.

Number.	Label on Bottle.	Acetic Acid. Grammes per 100 C.c.	Colour.
1	Pure white wine vinegar	6·45	Water-white
2	Vinegar	4·41	Pale straw
3	White vinegar	5·01	Nearly colourless
4	Acetic acid vinegar	3·15	Water-white
5	Vinegar	4·80	Water-white
6	White wine vinegar	5·47	Nearly colourless
7	Distilled malt vinegar	5·22	Water-white
8	White wine vinegar	5·10	Water-white
9	White wine vinegar	5·10	Water-white
10	Distilled vinegar	5·91	Water-white
11	White wine vinegar	4·23	Pale straw
12	No label	5·24	Water-white
13	White wine vinegar	5·79	Water-white
14	White wine vinegar	6·93	Water-white

White wine vinegar has a vinous aroma and peculiar flavour. However much it may be appreciated as a condiment by those who obtain the real article, it is clearly waste to employ it for pickling purposes, since its distinctive characters are thereby lost.

It seems highly improbable that wine vinegar will ever again come into general use in this country, and I would suggest that it would completely disappear if distilled acetic acid were not supplied in its place, or if the label described correctly the nature of the article sold.

The PRESIDENT said this subject had attracted some attention within the last twelve months. It was difficult at the present time to purchase by retail the substance to which Mr. Allen referred, and there was a difference of opinion as to what it should be.

Mr. M. CARTEIGHE regretted that the great majority of their brethren in pharmacy were so ignorant as to what white wine vinegar really was. Thirty years ago the educated pharmacists of this country were the people who introduced and sold the real white wine vinegar, and taught the public what a beautiful thing it was. He could not assent to Mr. Allen's notion that it should disappear, because in this country we are gradually, but slowly learning what good living was. Those who had once had a salad made with proper white wine vinegar would never touch malt vinegar afterwards. It was the duty of every pharmacist to sell white wine vinegar and no preparation whatever of acetic acid; you might as well sell alcohol for wine. He sympathised very much with those public analysts who had to go before magistrates on this question. He rather thought their old friend Phillips was responsible for turning off the younger generation of thirty years ago in the direction of acetic acid. He was under the impression that instead of putting vinegar into the 1851 Pharmacopœia, they put in dilute acetic acid. In his student days he remembered reading that Phillips practically said this was a much better preparation, that it was the real chemical thing mixed with water, and so gradually some of their brethren acquired the notion that acetic acid *plus* water was white wine vinegar. He would abolish the word "white" because some of the finest vinegar now obtained was old vinegar; the older it was the more beautiful it was, and it was almost red, not white. Wine vinegar was a preparation which should be sold to the public for their benefit by every pharmacist, as it would improve the public taste.

Mr. NAYLOR said he should like to ask if it was not extremely difficult to get what the public understood by white wine vinegar. Was not such an article as described by Mr. Allen, having the characteristic odour and the proper percentage of inorganic matter, difficult to obtain? Chemists had frequently been asked for it and had tried to obtain it in many quarters. Of a large number of samples with which he had been supplied, all had proved to be simply the distilled article, and contained perhaps 2/10ths per cent. of solid matter and not more. He was aware that it was not difficult to obtain a wine vinegar which was coloured, but that apparently the public did not want; they expected to find it as colourless as dilute acetic acid. He should like to ask if those who had had the opportunity of storing what was known as white wine vinegar found that it kept well. He (Mr. Naylor) had been told that the reason why it was not stored now in quantity was because it mothered so freely.

Mr. PARKER said a retail chemist in the less educated districts had two subjects to consider, viz., what the customer asked for, and what the customer wanted. Each retail chemist had to decide upon the definition of white wine vinegar according to the district in which he was placed. There were many districts in which white wine vinegar was constantly asked for by people who wanted a colourless acetic acid, and a chemist would simply drive his business away if he supplied the real article. They knew personally what white wine vinegar was, and they also knew that the customer in asking for it wanted dilute acetic acid. If they supplied the genuine article it would simply be brought back. It became a question how far it was the duty of the chemist to educate his customers. Amongst comparatively uneducated people it was a very difficult matter, and a chemist soon got tired of giving his customers a lecture on what real white wine vinegar was.

Mr. WARD endorsed Mr. Naylor's remarks. He had seen many samples of wine vinegar in France which were coloured.

Mr. PAYNE said his experience was that dilute acetic acid was invariably supplied. If they supplied the true wine vinegar it would be returned as not being the right thing. The majority of his customers required dilute acetic acid, which they knew under the name of white wine vinegar. The question naturally arose, Should pharmacists continue to label an article white wine vinegar when it was not so, or should they adopt another name? The public would be as well satisfied if it was labelled "wine vinegar"; but if they labelled it "acetic acid vinegar" the majority of customers, especially in a poor neighbourhood, would say they did not want acid to burn their insides out.

Mr. DRUCE endorsed Mr. Carteighe's suggestion of having a wine vinegar varying in colour from white to red, but which had the proper flavour, and when combined with oil was agreeable to everyone.

Mr. CUNNINGHAM said real white wine vinegar was of a light straw colour.

The PRESIDENT said there were three things sold as white wine vinegar: first the genuine article, which was generally of a pale olive or straw colour and had a fine flavour which was quite *sui generis*; secondly, there was distilled vinegar, generally made from malt, which was white, and consisted not only of dilute acetic acid, but also contained some acetic ether and alcohol; lastly, there was dilute acetic acid, which was largely sold under the name in question, or as white vinegar. Some years ago a grocer at Islington put up a notice in his shop "Vinegar warranted free from acetic acid"—meaning, of course, that it was genuine brown vinegar, and not merely dilute acetic acid. An impurity which was often present in dilute acetic acid, and made it very unpalatable for salads, was sulphurous acid.

Mr. CARTEIGHE suggested that as the milk of sulphur difficulty had been got over by a process of education, a similar process might be followed in the case of white wine vinegar. They could keep the genuine article and supply it to such as appreciated it, and sell the other to those who preferred it, but he entirely dissented from the proposition that, however poor or ignorant the customer, you should sell him acetic acid and water under the name of vinegar.

Mr. ALLEN said he appreciated the difficulty in which pharmacists were placed in this matter, but Mr. Carteighe's standpoint was perfectly correct. He would endorse very strongly what the President had said about sulphurous acid, which was often present in glacial acetic acid in much larger proportions than was generally recognised. He had had occasion to freeze some of this acid with a view to obtaining a higher quality than the commercial article, and found that that which drained away was so contaminated with sulphurous acid as to be practically useless. He felt distinctly that it was a great misfortune that the term white wine vinegar, which originally meant vinegar made from hock or sherry, had become degraded to mean dilute acetic acid. Its principal use was for making pickles, for which it was well adapted from its strength. Personally he should like to see the use of the genuine article revived, for he was rather a connoisseur in vinegar, and considered it as far superior to malt vinegar as that was to the concoctions which often took its place. Mr. Naylor raised the question, What did the public want? In general they wanted a pickling vinegar, and unfortunately they had been taught—and perhaps pharmacists had somewhat contributed to the error—to ask for white wine vinegar. They must meet the public requirements, and his suggestion would be to call the acetic acid preparation distilled vinegar, and keep the term white wine vinegar for the genuine article, which must survive from its own merits.

CONDENSED MILK.

BY A. H. ALLEN.

Commercial condensed milk is prepared by concentrating milk to about one-third of its original bulk, some receiving no addition or only a small quantity of preservative, a second class being treated with a large quantity of cane-sugar, and a third variety being specially treated with a view of approximating their composition to woman's milk. In unsweetened milks the extent to which concentration has been effected may be judged from the proportion of total solids. The percentage of ash cannot be depended upon for this purpose if mineral preservatives have been added, or if certain salts have been deposited during evaporation. Good cow's milk concentrated to one-third of its bulk would contain about 11·2 per cent. of fat, 10·5 of proteids, 14·5 of milk-sugar, and yield 2·1 per cent. of ash. The sugar added to sweetened condensed milk is usually about 40 per cent. of the total weight, and the milk is thus rendered unsuitable for ordinary purposes. Condensed milk from partially skimmed milk is now comparatively rarely met with, but there are others on the market made from separated milk. Sweetened condensed milk is far from being an ideal food for infants, and the so-called "humanised" milks form a much closer imitation of woman's milk. An attempt to feed an infant in accordance with the directions sometimes

given on labels will either result in semi-starvation or the system will be strained by the imbibition of an enormous quantity of fluid. Flagrant cases of misrepresentation in the condensed milk trade are unfortunately not punishable under the Sale of Food and Drugs Act, and the Committee on Food Products Adulteration does not seem to have realised the grave mischief caused by false statements respecting the dilution of condensed milk intended for feeding infants.

Mr. Cunningham said this was a very serious question. He had known a case in which children brought up on condensed milk had suffered from abscesses in the gums and mouth, showing want of nourishment.

The President, though he agreed with much Mr. Allen had brought forward, said condensed milk was a very important food for the poor, especially in large cities, and it was in his opinion much to be preferred as a food for young children than cow's milk to which certain preservatives, such as borax and boric acid, had been added. He had known young children who had been brought up on condensed milk and had apparently not suffered in any way.

Mr. Carteighe asked if he gathered correctly that many condensed milks contained as much as 40 per cent. of cane sugar.

Mr. Allen said the amount of cane sugar varied from 30 to 40 per cent., and sometimes more, in sweetened condensed milk. The difference was that if only the original amount of water were added to it, the result was a thick cream which no baby could suck, and was intolerably sweet. It therefore required the addition of more water, and the result was that such a large quantity had to be taken to yield sufficient nourishment as must cause a great strain on the system. This objection did not apply to unsweetened condensed milk, which would bear dilution without injury, and the nurse could then add cane or milk-sugar if required. It was, in his opinion, scandalous that people should be led to believe that they could produce a food suitable for infants by adding fourteen parts of water, making fifteen tins out of one, when there ought only to be two parts of water added. It was a great pity there was no means of preventing people telling lies on labels. He did not know whether they could be reached under the Trade Marks Act, but they certainly could not under the Sale of Food and Drugs Act. His contention was not that condensed milk was not a good food for infants, but that sweetened condensed milk was difficult to use on account of the large amount of sugar it contained, and that if diluted to the extent recommended on the tins, it was only a starvation food.

Notes on Potassa Sulphurata—Cotton-Seed Oil—The Pronunciation of "Pharmacognosy."

by W. Elborne, B.A., F.C.S.

Potassa Sulphurata.—The chief use of sulphurated potash in medicine is for the production of sulphur baths, and in this note I propose to draw your attention to the want of uniformity which prevails in reference to the physical characters and composition of ordinary commercial samples. The peculiarity about the B.P. process is that if pure carbonate of potash, or a fairly pure "commercial carbonate" (say of 91·0 per cent. carbonate) be used, the product, even after having been kept some months, does not appear to correspond so well with the B.P. characters and tests as does the product obtained from a carbonate far less pure (say one containing 13 or 14 per cent. carbonate of soda with about 8 per cent. of mixed chlorides and sulphates); hence the discrepancy as regards the appearance and nature of this drug. Four ordinary commercial samples of different "makes," are here described.

No. I. In lumps, dull yellow colour, fracture orange-brown; flame test, pronounced potassium flame, good trace of sodium; freely soluble in distilled water, yielding a clear orange yellow liquid (a drachm to the fluid ounce); a few drops of calcium chloride solution added to a portion give only slight precipitate (indicating undecomposed carbonate); another portion treated with excess of dilute nitric acid evaporated to dryness, the residue treated with water and filtered gives only a slight opalescence with nitrate of silver (chlorides).

No. II. In lumps, greenish-yellow colour, fracture orange-brown, freely soluble in water, yielding a clear solution, no immediate precipitate with calcium chloride; other reactions same as No. I.

No. III. In lumps, green colour, brown fracture, very deliquescent. Flame test, an overpowering sodium flame, requiring blue glass to detect the potassium. Dissolves in water, giving a turbid, dark-coloured solution, turbidity due to finely divided carbon; filtered, the clear liquid copiously precipitated by calcium chloride (precipitate soluble in hydrochloric acid with evolution of carbonic acid gas); another portion tested with nitrate of silver as in No. 1 gives a copious precipitate (chlorides).

No. IV. In dark green lumps, fracture dark brown, very deliquescent, yielding with water a very turbid, dark coloured liquid (turbidity due to finely-divided carbon); abundance of sodium, carbonates, chlorides, and sulphates.

It seems therefore that the yellow and greenish-yellow varieties of potassa sulphurata are made from the higher grades of commercial carbonate of potash, such as *c* and *d*, shown in the table below, and the green and dark green varieties from the lower grades, such as *e*.

Analyses of Crude Carbonate of Potash.

	Mineral (Strasfurt).			Vegetable Beet residues	
	a.	*b.*	*c.*	*d.*	*e.*
Potassium carbonate ..	99·64	96·72	90·93	91 10	77·25
Sodium carbonate	0·05	0·84	1·60	2·73	13·13
Potassium chloride	0 06	0·72	1·72	2 0	3·54
,, sulphate	0·10	0·82	1·71	3·2	4·84
Moisture	0·15	0·80	3·94	0·61	1·10
Insoluble matter	0·0	0·10	0·10	0·36	0·24
	100·0				

In conclusion, the amount soluble in rectified spirit (1 in 30) might very well be restored to 75 per cent. The Pharmacopœia might also add as a rider that for the production of sulphur baths a product prepared from dried commercial carbonate containing not less than 90 per cent. K_2CO_3 may be used.

Cotton-Seed Oil.—One of the queries of the B.P.C. "Blue List" is:—"Can cotton-seed oil be used advantageously for any pharmaceutical purposes"? I may say that after a prolonged trial of it as a substitute for olive oil in ointments, liniments, and other applications for external use, on the authority of an eminent therapeutist its use has been abandoned, since in some cases it produced decided irritant effects; here is a sample of the oil (labelled A) which produced the unfavourable effect, and other samples (B and C) used previously, against which there were at the time no complaints.

The Pronunciation of "Pharmacognosy."—From the "Blue List" it seems that the mispronunciation of Latin pharmacopœial names is common, and it is suggested that a short prosody be compiled for purposes of reference. I do not propose to follow up the investigation, but here is a word of Greek origin in current use among us signifying "a scientific knowledge of the whole organic materia medica." Pharmacognosy is, I observe, usually pronounced pharmacog'nosy ("g" hard and accented); whereas the opinion of scholars is that it should be pronounced always with the "g" silent—pharmaco gnosy or pharmacogno'sy (accent either on the first "o" or the second).

Mr. Alfred Allen suggested that pyroxylin and hæmatoxylin should in future be pronounced pyrozylin and hæmatozylin.

Mr. R. Wright thought there was little room for discussion on this paper, seeing that the author, as a member of the Chemical Society and of the Linnean Society, as well as a Bachelor of Arts, ought to be an authority on each of the three subjects he had dealt with.

Mr. Farr said he frequently had to use potassa sulphurata, and was rather struck by Mr. Elborne's explanation of the colour. He had noticed the dark residue, and on testing it on several occasions, found it was due to sulphide of iron, though there might be traces of carbon present as well.

Mr. Wardleworth said cotton-seed oil was only prepared commercially, without any reference to pharmaceutical purposes, and probably the differences in its action were due to the fact that very little care was exercised in the process. Sometimes the seed was used without the husk, and sometimes with it, and possibly the

husk might contain constituents which had a detrimental effect. It would be desirable to prepare oil specially from the kernel and from the entire seed, and investigate their properties separately.

Mr. ABRAHAM asked if the acidity of the two samples produced had been estimated.

Mr. GROVES thought the pronunciation of words ought to be determined by their etymology. He hoped that some day someone properly qualified for the task would prepare a list of these hybrid words and give their proper pronunciation.

Mr. CARTEIGHE said some of the most eminent authorities were of opinion that words adopted into the English language from foreign sources should be pronounced in accordance with English or Saxon usage. He had been rather shocked the previous day to hear a prominent member of the Conference pronounce the word centimetre, which had now been thoroughly introduced into the English language, in the French fashion.

The PRESIDENT said he thought the presence of the green colour in potassa sulphurata would require investigation by the Pharmacopœia Committee, and probably a test would have to be given for the amount of sulphuretted hydrogen possibly evolved from it.

Mr. L. SIEBOLD asked how Mr. Elborne accounted for the presence of carbon, and in what manner he identified it.

Mr. THOS. TYRER thought Mr. Farr had hit the point exactly. This preparation was made on a large scale in iron vessels, and that no doubt was the source of the apparent contamination. He must say he had never seen the substance quite as dark as the sample now shown. With regard to the percentage of potash, he should like to say that on the manufacturing scale common carbonate of potash was used, not salts of tartar, which was too expensive and possessed no advantage, but quite the contrary, as it contained such a large quantity of moisture.

The PRESIDENT suggested that some of the evil effects which had been found to follow the use of cotton-seed oil might be due to the presence of a few cruciferous seeds. Another oil which was largely used instead of olive oil, being much cheaper, was sesame, which was non-irritating and non-drying.

Mr. E. SAVILLE PECK, B.A., agreed with Mr. Carteighe that when a foreign word was adopted into the English language, it should be pronounced according to the English practice, and he did not see why the same rule should not apply to a word derived from two foreign languages, or a Latin word with a Greek stem.

Mr. ELBORNE, in reply, said probably Mr. Carteighe had given the best rule for the pronunciation of foreign words introduced into the language, but allowance must always be made for the personal equation. The great thing was to attain uniformity, and probably pharmacognosy would continue to be pronounced with the "g" sounded. He should also prefer pyroxylin with the sound of "x" to that of "z." With regard to the cotton-seed oil, he had simply brought forward the subject to show that the best kind of commercial article had been tried and condemned practically. He had not examined the samples chemically, and could say nothing as to their acidity. To investigate the matter thoroughly would require pure samples of the oil, and that would necessitate specially preparing them, which would be rather a laborious undertaking. He was satisfied that the black precipitate from the potassa sulphurata was carbon, because it burned away on platinum foil, which it would hardly have done if it had been sulphide of iron. He did not, however, make a chemical examination of the precipitate, and it was quite possible there might be traces of sulphide of iron.

FORMALDEHYDE AS AN ANTISEPTIC.

BY F. C. J. BIRD.

Formaldehyde is an exceedingly powerful antiseptic, and at first sight appears to be one which should prove exceptionally valuable in certain pharmaceutical operations on account of its intense germicidal action, the absence of odour or taste in dilute solution, its non-poisonous nature, and its volatility. It has been stated that milk may be preserved by formaldehyde, and the antiseptic subsequently driven off on boiling or cooking the milk; this statement suggests a practicable process for the preparation of liquid extracts such as ergot by repercolation with cold water. The difficulty of preventing the ergot liquors from turning sour when working in any but the coldest weather presents an almost insuperable obstacle to the adoption of the method under present conditions, but it was thought that by the use of formaldehyde the ergot percolates might be kept sweet, and the antiseptic finally removed by the application of a moderate temperature at the end of the operation. To my disappointment, however, I found that formaldehyde is retained by aqueous liquids with the greatest pertinacity, and it is almost impossible to effect the removal of the last traces. The following examples will illustrate this:—

I. Forty fl. oz. water containing 80 minims formaldehyde solution (= 1 in 600) was heated to 200° F. on a water bath at intervals during four days, until the volume was reduced to 10 f. oz. Tested from time to time, it always gave abundant evidence of the presence of formaldehyde, and on gently warming the residue the characteristic odour became distinctly perceptible.

II. 100 C.c. distilled water, containing 1 minim of solution of formaldehyde (about 1 in 3800) was rapidly boiled down to 40 C.c. The residue still reacted strongly for formaldehyde.

III. 100 C.c. water containing 1/10 minim formaldehyde solution (= 1 of formaldehyde in 38,000) was distilled, and the distillate collected in fractions of 5 C.c., each fraction being tested with Nessler's reagent.

Fractions 1 to 7 gave a brownish yellow opalescence, changing to copious orange precipitate, which gradually became yellow, and finally blackened.

Fractions 8-16. A yellow precipitate which darkened on standing.

Distillation was now stopped, and the 20 C.c. remaining in the retort tested. A distinct yellow precipitate fell, indicating that the liquid still contained formaldehyde. These facts will evidently have to be taken into account in any quantitative process dependent on the distillation of mixtures containing formaldehyde.

If used as a preservative for infusions, etc., the small proportion necessary does not affect either the taste or flavour of the liquid, an important advantage when contrasted with chloroform. The following table gives the result of a trial of its antiseptic powers on four of the Pharmacopœia infusions.

The Roman numerals represent five series of samples (each measuring 10 fl. oz.) which were treated as follows:—

I. No addition.
II. Vapour from one minim formaldehyde solution.
III. Vapour from five minims formaldehyde solution.
IV. One minim formaldehyde solution added to the infusion.
V. Five minims formaldehyde solution added to the infusion.

The infusions were kept in corked bottles, exposed to most trying conditions of temperature, the thermometer registering from 70° to 80° F. during the whole week.

Inf. Sennæ, B.P.

	I.	II.	III	IV.	V.
2nd day ..	Slightly decomposed	Unchanged	Unchanged	Unchanged	Unchanged
3rd ,, ..	Sour and putrid	Slightly decomposed	,,	,,	,,
4th ,, ..	,,	Sour	,,	Sour	,,
5th ,, ..	,,	,,	,,	,,	Slightly mouldy, no putrid odour
6th ,, ..	,,	,,	,,	,,	Mould on surface increased
7th ,, ..	,,	,,	Slight decomposition, no mould	,,	Very mouldy but not sour

Inf. Calumbæ, B.P.

	I.	II.	III.	IV.	V.
2nd day ..	Unchanged	Unchanged	Unchanged	Unchanged	Unchanged
3rd ,, ..	Slightly decomposed	,,	,,	,,	,,
4th ,, ..	Sour	,,	,,	,,	,,
5th ,, ..	,,	Slightly mouldy	,,	Mouldy	Mouldy on surface
6th ,, ..	,,	Decomposition commenced	,,	Slightly decomposed	Mould increased
7th ,, ..	Putrid	Sour	Very slight decomposition	Sour	Odour mouldy, but otherwise unchanged

Inf. Gentian. Co., B.P.

	I.	II.	III.	IV.	V.
2nd day ..	Unchanged	Unchanged	Unchanged	Unchanged	Unchanged
3rd ,, ..	Decomposition commenced	,,	,,	,,	,,
4th ,, ..	Sour	,,	,,	,,	,,
5th ,, ..	,,	A little mould on surface	,,	A little mould on surface	,,
6th ,, ..	,,	Mould increased	,,	Mould very much increased	,,
7th ,, ..	,,	Sour	,,	Very mouldy and sour	Mouldy

Inf. Ergotæ, B.P., Made with Cold Water.

	I.	II.	III.	IV.	V.
2nd day ..	Decomposed and putrid.	Unchanged	Unchanged	Unchanged	Unchanged
3rd ,, ..	,,	Slight decomposition, no putrid odour	,,	,,	,,
4th ,, ..	,,	Mouldy	,,	Slightly decomposed and mouldy	,,
5th ,, ..	,,	Mouldy and sour	,,	Mould increased	,,
6th ,, ..	,,	,,	,,	Mouldy and sour	Mouldy on surface, but not sour
7th ,, ..	,,	Putrid	,,	Putrid	Mould increased

The vapour of formaldehyde was applied to the infusions referred to in columns II. and III. by passing a fine wire through the cork of the bottle, and attaching to its extremity a tuft of cotton wool moistened with either one or five minims of formaldehyde solution, as the case might be. Each bottle was opened daily, and a small quantity of the contents poured out.

On contrasting columns II. and III. with the corresponding ones IV. and V., it will be noticed that putrescence is either retarded or prevented altogether by the antiseptic; but in the former case, in which the vapour is employed, mouldiness is either slight in amount or absent, whilst in the latter, in which the antiseptic is added directly to the infusion, the growth of mould is very conspicuous and advances rapidly. This confirms previous observations that bacteria and pathogenic organisms succumb easily to the influence of formaldehyde, and moulds are very resistant to its inhibitory action. The use of formalin vapour has the further advantage that much less of the antiseptic actually remains in the infusion, for at the end of a week the cotton wool still retains a strong formaldehyde odour. The vapour diffused from the cotton wool probably forms a thin film of liquid on the surface sufficiently charged with formaldehyde to prevent the growth of mould, whilst the infusion beneath contains little or none. It is evident from the above table that 1 minim of formaldehyde solution on cotton wool suspended above the liquid will preserve an infusion for two or three days under the most adverse conditions, and that 5 minims will keep it for a week or more. Under more favourable circumstances, such as exist in most pharmacies, the samples would have kept good for a much longer period. I regard the experiment with ergot as a most severe test, for a cold aqueous infusion of that drug is perhaps more easily putrescible than any other liquid with which the laboratory operator has to deal. This use of formaldehyde in this manner as a preservative for infusions appears to be quite free from objection.

The influence of formaldehyde on vegetable colours is well illustrated in the following experiment. Two samples of infusions of rose petals were set aside, one containing 1/10 minim formaldehyde solution per fluid ounce, and the other without any addition. After six weeks they were examined. Both were covered with a thick layer of mould. In the one containing formaldehyde the colour was unchanged; in the other it had been completely destroyed by the growth of fermentative bacteria.

The President said the use of formaldehyde had become much extended of late years as a preservative for milk, but it was very doubtful whether this was permissible. He understood as little as one part in 50,000 would preserve milk. Mr. Bird seemed to be averse to the use of it in the laboratory. The curious action it had upon gelatin was most striking, coagulating it to a tough, india rubber-like substance, insoluble in water.

Mr. Martin said a substance called formalin had recently been introduced by a German firm, who were pushing it to the exclusion of other preparations. He did not gather from Mr. Bird whether he recommended the use of formaldehyde for preserving infusions.

Mr. Bird said it was very effective when a few drops were placed on cotton wool and suspended on a wire over the surface of the infusion; it did not touch the infusion at all.

Mr. Druce said the paper suggested to him a method which he adopted some few years ago for preserving flowers, in accordance with a hint which he got from the herbarium at Berlin. He took a solution consisting of two parts of sulphurous acid and one of methylated alcohol, and having immersed the freshly-gathered flowers in it until the red colour was entirely bleached, they were then shaken and dried in the ordinary way, and as oxidation proceeded, the colour gradually came back again until the original tint was regained, and it then remained permanent. He had specimens gathered six years ago which were fairly good yet. It occurred to him that probably the solution of formaldehyde either alone or in conjunction with methylated spirit would answer the same purpose, and he should certainly try the experiment.

Dr. Symes said if gelatin were heated before the addition of formaldehyde it was not rendered hopelessly insoluble, and a very dilute solution of aldehyde was quite sufficient as a preservative.

Mr. J. C. Umney said he had found formaldehyde very useful in preserving syrups containing citric acid, and lime or lemon juice, in place of sulphurous acid. That was the only way in which he had been able to apply it successfully.

Mr. Elborne said it was largely used at University College Hospital, in the pathological museum, for the preservation of all kinds of tissue, especially brains. It was also used for hardening the eye, and appeared to be the best agent known for that purpose, as it did not render the albumin opaque. One point which had not been mentioned was that formaldehyde was a most delicate reagent for tannin, which pointed it out as a special preservative for organic liquids.

The President said he believed formaldehyde was very generally used in pathological museums in place of methylated spirits. It was more economical and avoided the danger of fire.

Mr. D. Saville Peck thought possibly the mixture Mr. Druce had used for preserving flowers, viz., sulphurous acid and methyl alcohol, might give rise to the formation of formaldehyde, and thus Mr. Druce might have been the first to introduce this substance into this country.

Mr. Parry said it was pretty well settled that it was impossible to drive off formaldehyde from an aqueous solution by heating; even boiling only converted it by oxidation into trioxymethylene. Even on the bottles of formalin sold by a German firm, the boiling of the solutions was strongly condemned for disinfecting purposes. With reference to the hardening of gelatin, he might refer to a new printing out paper hardened by formaldehyde which had been recently introduced and was very successful in producing glazed prints. He had used it with great success. The paper could be taken direct from the warm bath, rolled up, squeezed, and even jumped upon, and when unrolled it would be found that the film had not stuck at all. With regard to the reaction with tannin, he thought it would be more correct to say that tannin was a delicate re-agent for formaldehyde. The latter, used as a reagent, would give exactly the same reaction with so many bodies, that it would be impossible to tell which you had got. If you added to it phenol you got first a white precipitate, which gradually became pink, and went on getting darker and darker. Pyrogallic acid and tannic acid, yielded the same results, with slight differences in colour according to the conditions of working. Dr. Hehner had published in the *Analyst* an exhaustive paper on this subject, giving a list of the reactions. He hardly thought it likely that sulphurous acid would act as an oxidiser of methylated spirit and form formaldehyde.

Mr. L. Siebold said the effect produced on flowers by sulphurous acid was easily explained. After the bleaching effect was got over the colour kept perfectly well, what really had to be guarded against being the injurious effect of the ammonia in the air and oxalic acid, or, in fact, any acid had much the same effect. After the sulphurous acid had finished its bleaching action, it would no longer exist as sulphurous acid, but as sulphuric, and that would simply operate to counteract the effect of the ammonia.

Mr. A. H. Allen said he habitually used formaldehyde for pre-

serving milk, a very minute quantity being sufficient. If an excess were used, a solid residue was produced which could not be evaporated. He could bear out what Mr. Parry had said.

Mr. MacEwan said the point brought out so clearly by Mr. Bird, that the vapour of formaldehyde was more powerful as an antiseptic than the solution, had been taken advantage of in Germany for the preservation of cadavers. He would also refer to the recent introduction as an antiseptic, and a substitute for iodoform, of a mixture of gelatin and formaldehyde, which was dried and reduced to powder.

The President remarked that formaldehyde was now made official in the German Pharmacopœia. It seemed to be much more used in Germany than here.

Mr. Bird, in reply, said the powder referred to by Mr. MacEwan was first worked out by Mr. Schering; it consisted of 25 minims of formaldehyde to about 1 lb. of gelatin, which was evaporated to dryness and then powdered. It was found that this powder, when in contact with living tissue, disengaged formaldehyde vapour, and was, therefore, very useful in dressing wounds, surrounding them with a disinfectant atmosphere. The point of the paper was that this substance was not suitable for the preservation of infusions or other liquids on a large scale, because it could not be driven off, but it might be usefully employed in pharmacy for preserving small quantities of an infusion for a few days or a week by means of the vapour. Mr. Holmes had used it to some extent for the preservation of plants, and found it very useful for herbarium specimens; he read a paper upon it some months ago before the Museum Association. The weak point about it for such purposes as Mr. Umney referred to was that it did not prevent the growth of mould. It seemed very destructive to bacteria, fermentation, and putrefaction, but had not much effect on the higher forms of vegetable life. Tannin should certainly be described as a reagent for formaldehyde. It was distinctly stated by Scherings in their pamphlet, that if milk were boiled or cooked, the whole of the formaldehyde was driven off, and it was that statement which he wished to disprove. The formalin introduced by Scherings contained about 40 per cent. of aldehyde, was very pungent in odour and taste, had a specific gravity of 1·070, and was acid to litmus paper, probably from the presence of formic or acetic acid. It contained copper, and was of a pale green colour in bulk, due to the presence of a soluble salt of that metal. He had also a specimen of paraformaldehyde, a polymer which was given as an intestinal antiseptic in doses up to 90 grains. He thought formaldehyde possessed substantial advantages over chloroform as a preservative in a state of vapour, being stronger, and when put in an aqueous solution it did not immediately evaporate, and in particular it did not communicate its odour to the article preserved. He had had some experience with it in preserving milk, and found that a very few drops would preserve a pint or a pint and a half for three or four days, even in hot weather. It was particularly successful in preserving meat, a few drops put on the dish, with a well-fitting cover over, being quite efficacious in keeping the meat sweet for four or five days, no matter how sultry the weather. No doubt as its properties became better known it would have an extensive field of application in pharmacy.

The President here read a letter from Mr. Reynolds of Leeds, who had sent specimens of *Podophyllum emodi* and *P. peltatum*.

Notes on Pyroxylin B.P.

BY CHARLES T. TYRER.

In conducting a considerable number of experiments in the manufacture of pyroxylin on a large scale, it was found that most formulæ given in text-books were either unreliable in themselves or were wanting in precise directions. The B.P. formula, whilst producing a very soluble pyroxylin if properly worked, is unfortunately lacking in details of such preciseness as to enable one to achieve this good result without preliminary experiment. A minute proportion of moisture present in the cotton wool used (a freshly opened parcel from a prominent firm gave 4·6 per cent. moisture) will alter results as it dilutes the acid in actual contact with the fibre, causing a rise in temperature; variation in temperature of mixed acids; time of exposure to action of acids; method of washing, all have their effect on the finished product.

The following experiments were made to ascertain the best methods of construing the B.P. directions:—

The cotton-wool was the best obtainable; gave no appreciable loss in weight after treatment with ether, and was well dried, picked, and carded just previous to use. The time taken to add the 1 oz. of cotton was 30 seconds to complete immersion.

When sufficiently acted on by the acids, the pyroxylin was put on a perforated porcelain dish and thoroughly and quickly pressed with a pestle, then thrown into not less than three gallons distilled water, and rapidly stirred, drained, again pressed, and re-washed until free from acidity and liquor passes BaCl test. If the pyroxylin is not pressed to get rid of acid immediately on throwing into water, a considerable portion passes into solution (which although almost immediately thrown out again is in such a finely divided and pulpy condition that it cannot be recovered); the dilution and consequent rise of temperature in acid in contact with fibre causing considerable action.

Of the above experiments No. 1 undoubtedly yields a very good

	Dried cotton wool.	Acid Sulph., 1845.	Acid nit., 1420.	Temperature on mixing acids.	Temperature on immersing cotton.	Duration of immersion counted from moment of complete immersion.	Weight of product.		Remarks.
1..	1 oz.	5 oz.	5 oz.	140° F.	140° F.	2 min. 30 sec.	330 grains	B.P.	A perfectly and quickly soluble article, making a limpid collodion.
2..	,,	,,	,,	,,	130° F.	,, ,,	337 grains		Fairly soluble, not equal to No. 1, less limpid.
3..	,,	,,	,,	,,	120° F.	,, ,,	450 grains		Not quite equal to No. 2. Collodion more glutinous than above.
4..	,,	,,	,,	,,	140° F.	3 min.	—		Decomposition started at 3 minutes, violent ebullition and evolution of gas and steam.
5..	,,	,,	,,	,,	,,	2 min.	357 grains		Not very soluble.
6..	,,	,,	,,	,,	,,	1 min. 30 sec.	375 grains		Badly soluble.
7..	,,	10 oz.	,,	150° F.	150° F.	5 min.	1 oz. 130 grains	Varia-	About equal to No. 5.
8..	5 oz.	25 oz.	25 oz.	140° F.	140° F.	6 min. 30 sec.	2 oz. 327 grains	tions on	Great tendency to decompose; not very soluble.
9..	,,	30 oz.	30 oz.	,,	,,	3 min. 30 sec.	254 grains	B.P.	Great tendency to decompose; fairly soluble.
10..	,,	35 oz.	35 oz.	,,	,,	,, ,,	3 oz. 229 grains		Great tendency to decompose; slightly better than No. 9.
11..	10 oz.	50 oz.	50 oz.	,,	,,	—	—		Decomposition started at 1 minute.
12..	1 oz.	5 oz.	5 oz.	,,	69° F.	3 min.	330 grains		Acids were mixed and allowed to stand for 16 hours in open jars exposed to atmosphere (warm dry weather); badly soluble.
13..	,,	,,	,,	,,	,,	,,	437 grains		Acids were mixed and allowed to stand for 16 hours out of contact with atmosphere slightly better than No. 2.
14..	100 grammes	Acid sulph., 1835 ‡200 C.c.	Acid nit., 1414 1400 C.c.	149° F.	90° F.	2 min.	159 grammes	U.S.P.	Not very soluble.
15..	,,	,,	,,	,,	,,	3 min.	153 grammes		Fairly soluble.
16..	,,	,,	,,	,,	,,	4 min.	149 grammes		Equal to B.P., but resulting collodion more gelatinous.
17..	,,	,	,,	,,	,,	5 min.	153 grammes		Not very soluble, more than No. 14, not equal to No. 15.

and soluble pyroxylin. The yield, however, is not what might be expected from theory. Products approaching theory (100 giving 155, Wagner) are generally very badly soluble if quantities approaching B.P. are taken. The following form gives a fair yield (although like the B.P. it does not work in larger batches) with a good solution; the resulting collodion being somewhat less fluid than that of B.P.:—

Cotton wool	200 grains.	Temp. on mixing acids then adding water ..	162° F.
Ac. sulph. 1845.....	8 fluid oz.	Temp. on immersion ..	150° F.
Ac. nit. 1450	4 ,, ,,	Time (40 secs. to immerse)	2 m. 20 secs.
Aqua	1½ ,, ,,	Product.....	278 grains.

The series of experiments with 5 oz. and 10 oz. of cotton wool confirmed results of experiments on a large scale, viz., that for comparatively large amounts of cellulose the amount of mixed acids required is proportionately much larger than the amount used in small batches.

It does not seem, however, advisable to increase the size of the B.P. batches (certainly to not more than that of the U.S.P.) as pharmacists would not always have handy the necessary vessels, and the risk is proportionately increased, both in the manufacture and drying. The best and safest drying temperature is 90° F., the pyroxylin being first wrung as dry as possible and picked.

The U.S.P. form (xpt. 16) as regards product appears to be a better form than the B.P., it is perfectly soluble, whilst its solution compared with B.P. being slightly more gelatinous, the collodion will bear some slight dilution.

If owing to bad washing and manipulation, the pyroxylin contains acid, the risk of decomposition is materially increased during drying. With regard to preservation for any length of time, the safest and best plan is to moisten the dry cotton with an equal weight of S.V.M., and preserve in a well-stoppered jar; when required for use it is quickly and easily dried. The method of moistening with water (pyroxylin is often ordered thus) is unsatisfactory, as in a few months the water will give an acid reaction and the cotton a corresponding loss of solubility; and the chances of spontaneous decomposition are increased. I have rarely seen a sample of any make of pyroxylin which, if moistened with water and placed on a slip of litmus paper on a watch-glass, did not redden the paper within six hours.

However soluble the pyroxylin may be, the collodion always deposits slightly on keeping. This deposit is a nitro-compound, probably of very low nitration. I have found it to be soluble in pure, dry amyl acetate and in acetone, whilst benzol causes gelatinisation; the addition, however, of a small percentage of acetone or amyl acetate to the B.P. collodion does not prevent this deposit.

It should be remembered that there is no sharp line of demarcation between the nitro-celluloses, as bodies containing almost any percentage of nitrogen between the highest and lowest limits may be produced, depending on the conditions under which the nitration is carried out.

One of the main difficulties in defining results of analysis of pyroxylin is that a mixture of soluble nitro-celluloses is always formed, it being very doubtful if any one compound has been isolated in a state of purity. Indeed, whilst manufactured under apparently identical conditions, so slight are the causes of variation, that two samples of pyroxylin scarcely ever give exactly the same amount of nitrogen.

For the determination of the nitrogen contained in the nitrocellulose, that of treating the same with sulphuric acid and mercury, as in Crums' process for the estimation of nitrates in water, conducted in the nitrometer (Allen, vol. 1, p. 327, 1885 edition) was used.

The pyroxylin made, according to Xpt. No. 1, gave 11·27 per cent. nitrogen; this corresponds most nearly to tetra-nitro-cellulose. This result agrees with Allen, who gives the formula of mono-nitro cellulose $C_6H_9(NO_2)O_5$, and that of the pyroxylin of the B.P. as $C_6H_8(NO_2)_2O_5$, or $C_{12}H_{16}(NO_2)_4O_{10}$.

The variations in results of analysis of different investigators are due to the presence of varying quantities of the lower nitro compound in admixture.

After this paper had been read by Mr. Naylor,

The President, in thanking Mr. Tyrer for his paper, said he seemed to have treated some of the points of difficulty met with in the pharmacopœial process.

Mr. T. Tyrer said the papers on the agenda were entirely the work of his son, he (Mr. T. Tyrer,) having nothing to do with them except to say to him, "If you are sure of your facts, go ahead." He had taken some trouble to see whether the estimates made by his son could be verified from an independent source, and he had sent a couple of samples of pyroxylin to an expert, who had written endorsing the results arrived at by the writer of the paper.

Indian Bael and Its Preparations.

BY A. C. ABRAHAM.

The fluid extract of bael has been the cause of much trouble and perplexity, and has been somewhat unfairly condemned. The pulp is the active portion of the fruit, but the common statement that bael is an astringent, and the assertion of one writer that the active principle is a variety of tannin, have apparently led many to a quite opposite conclusion. Manufacturers, amongst others, seem to hold the latter view, as indicated by the low specific gravity and extractive in the specimens referred to in the accompanying table.

		Sp. Gr.	Extractive in 1 fl. dr.	Colour.	
1	Own make	1·125	21·8	dark	
2	Retail Firm.....	1·068	14·4	light	
3	Wholesale House..	1·083	15·7	dark	
4	,, ,,	1·044	11·0	light	
5	,, ,,	1·030	7·7	light	
6	Own Make	1·126			not filtered
7		1·137			filtered
8		1·095			filtered
9		1·085			filtered

The process official in the British Pharmacopœia is a bad one, and appears calculated to cause the rejection of the pulp. Experiments have shown that while doses given thrice daily of one or two drachms of the pulp, separated by filtration in making the extract by that process, checked chronic dysentery at once, the same dose of the fluid extract had no effect. A confection containing all that might be rejected by filtration, and, if possible, more of the pectinous matter was also effective, but difficulties in the preservation of this lead to the recommendation that the fluid extract be retained, filtration being omitted from the process. The following process yields a very satisfactory preparation:—

Pass 16 lbs. bael through a coarse cane sieve (say ⅜ inch holes), macerate all day in 8 gallons distilled water, and at night put into flannel bags. In the morning again mix with 8 gallons distilled water, and in two hours return to bags previously washed. Repeat this at night. Evaporate, *secundem artem* in a water bath or in vacuo at a still lower temperature to 14 lbs.; cool, make up to 208 fl. oz., add 48 fl. oz. of rectified spirit gradually, and label "Shake the bottle." This is essentially the formula of the present P. B., with the doubtful points specifically cleared up, and the product will be found to keep well and to be pleasant to take, and, I believe, thoroughly active. If the maceration and filtration through washed flannel bags is carefully conducted I do not think the pressing is necessary, and unless it can be shown that the mucilaginous matter contained chiefly in the rind of the fruit is, as well as the pectinous matter surrounding the seeds, active it would seem desirable to exclude it, as it further thickens the product. It is stated that even the increased quantity of spirit now employed is not sufficient to prevent fermentation, but I believe that such fermentation is only due either to loss of spirit during filtration or possibly to the presence of the mucilaginous matter, or even it may be to the washing of the substance rejected by the filter with water to obtain the theoretical product. I should, perhaps, hardly conclude a paper which necessarily takes the shape almost of an apology for the fluid extract of bael without saying that several of the leading physicians in Liverpool regard bael as a drug possessing unique and invaluable properties.

The President said bael was a drug which was not used now so much as it was twenty years ago. In London there was very little demand for it, but in India it found great favour, where it was used in cases of dysentery and diarrhœa. The fruit was useful not only as an astringent, but also as a laxative. He did not know whether Mr. Abraham had examined this point; but Hanbury

stated that in a fresh condition the fruit contained no tannin. What the astringency was due to was hardly well ascertained.

Mr. Cross said in his young days they manufactured a very considerable amount of bael in three forms, the most popular of which was the liquor baeli, which was made by smashing the immature fruit and evaporating to a lower bulk. No doubt its popularity with medical men was due to the fact of the fruit having been broken up before it was acted upon. The liquid extract was a considerably more expensive preparation, and was made by maceration of the whole fruit and then evaporated. The most effective preparation of bael for diarrhœa was made from the fresh fruit. It was imported candied with sugar, and by a certain process (which at one time was called a patent process) it was evaporated to a little lower bulk and put up in jam pots. Since that period he had seen very little bael, but could remember the time when it was extremely popular. The greater portion of the liquor baeli which he (Mr. Cross) manufactured was exported to the colonies.

Mr. Abraham doubted whether filtration made any difference in the specific gravity. He had had it as much as 1·137 after filtration. In reply to the President's question, he said he had never absolutely tested for the amount of tannin, but he thought it was very small indeed. In pressing they had used copper plates, but had never observed any material action upon them.

Liquor Auri et Arsenii Bromatus.

BY R. WRIGHT, F.C.S.,
Pharmaceutical Chemist.

In this note attention was drawn to the uncertainty attending the dispensing of the above preparation owing to existing formulæ yielding products differing materially both in strength and composition, and to the desirability of substituting a direct method under the authority of some representative body for the indirect methods at present in use. The preparation is usually made with Clemen's solution — the liquor arsenii bromatus of the United States National Formulary as the starting point; and the author of the paper gave an outline of the published processes for this liquid, and showed wherein they differ.

The original formula for Clemen's solution was as follows:—

Take of—

Arsenious acid	80 grains.
Potassium carbonate	80 grains.
Bromine	160 grains.
Distilled water	15½ ounces.

For the production of the liquor auri et arsenii bromidi the process given in Martindale and Westcott's 'Extra Pharmacopœia' is as follows:—

Take of—

Clemen's Solution	192 minims.
Gold Bromide	1½ grain.
Distilled Water to	1 fluid ounce.

The drawbacks to this process are (1) the Clemen's solution must be specially prepared, and (2) there is sometimes a difficulty in obtaining a perfectly soluble bromide of gold. For a direct process, in which these difficulties are avoided, the author proposes the following:—

Take of—

Arsenious acid, in powder	40	grains.
Potassium carbonate	40	,,
Bromine	100	,,
Gold (in leaf)	13·5	,,
Distilled water, sufficient for	1	pint.

The arsenious acid and potassium carbonate are placed in a flask with four ounces of the water, and boiled until solution is complete. The gold leaf is introduced into a wide-mouthed bottle, twelve ounces of water added, and the bromine run in, and the whole shaken until the latter is dissolved. The solution previously made is added, and the mixture shaken for a few seconds. The liquid is transferred to a flask or retort, and excess of bromine removed by boiling. The solution is then allowed to cool, and is subsequently diluted with distilled water to the required volume, and filtered. Traces of silver chloride are formed during the process, derived from impurities present in the materials employed. The usual dose of the preparation is from 5 to 10 minims. The maximum dose contains about 1/32 grain gold tribromide, and a quantity of arsenium, in combination, equal to 1/24 grain arsenious acid.

The President said he had found that the Clemen's solution which was kept by many chemists could easily be used to convert the preparation into a solution that would be of the same strength as the preparation used in America. The formula he had published was one that could be used extemporaneously without any difficulty. Mr. Wright got at more definite results by manufacturing bromide of gold direct from gold leaf. It probably took a little time.

Mr. Wright said it took half an hour, and the excess of bromine could be easily removed.

Mr. Conroy said one might depend upon it that when Mr. Wright read a paper he would finish up with a practical suggestion useful to all. This paper was evidently prepared with the idea of showing pharmacists how to make their own preparations, but he could assure the author that wholesale firms would not be above learning from it. After trying to make this preparation by the American method and being disappointed, he had recourse to Mr. Martindale's 'Extra Pharmacopœia,' and was soon put right. Still he had no doubt that this direct process was superior, and that wholesale houses would take advantage of it.

Mr. Martin thought this formula would probably prove very useful, and they would all sympathise with the efforts of everyone who sought to enable chemists to make their own preparations, and this was one of the great objects of the Conference. He only regretted that the author thought it necessary to insist onthe use of distilled water, as such a warning ought not to be necessary.

Mr. MacEwan said the new U.S. National Formulary had a recipe for this preparation which differed materially from Mr. Wright's, and it seemed a pity that the two great Anglo-Saxon pharmaceutical associations should not work on parallel lines. The American recipe started with arsenious acid and bromine, and the solution was made by boiling, and to that tribromide of gold was added and a solution made of that, which was then filtered, and a certain amount of bromine added, the excess of bromine being driven off by heat. The resulting preparation contained 1/16th gr. of arsenium per drachm. The great difference in Mr. Wright's preparation was that it was strongly alkaline, whilst the American contained no free alkali. The name also was different—liquor arsenii et auri bromi, meaning that it was a solution of arseniumt and bromide of gold. No doubt bromide of gold existed in it, but there was no such thing as arsenium bromide in aqueous solution.

Mr. Wright regretted he had not seen the new edition of the National Formulary to which Mr. MacEwan referred, or he should have mentioned it in the paper. His solution was not alkaline, though there was an excess of bromine, which was boiled off.

Mr. MacEwan said the American product contained no carbonate of potash.

Mr. Wright said there would be no free carbonate in this solution. He had not attempted to determine its composition, but he should imagine it was rather uncertain. There was bromide of potassium, and if you added silver nitrate solution to the liquor auri the bromide came down first; you got almost all the bromide precipitated before the arseniate came down and filtered that off. He judged there would be in the solution tribromide of gold, arseniate of potassium, bromide of potassium, and in addition there would probably be a trace of hypobromide or bromate, perhaps both. When you added gold leaf to the bromide solution the gold leaf did not dissolve at once, proving that it was necessary to have some oxidising agent present. If after adding the gold leaf to the bromide solution you put in the solution first made, the solution of the leaf was effected at once. The precipitate was silver chloride, which he was at first puzzled to account for, but the silver evidently came from the gold and the chlorine from the bromine.

The Conference here adjourned for luncheon, and on resuming the following paper was first read by Mr. Naylor:—

Essence of Rennet.

BY J. A. FORRET.

A formula for a satisfactory essence of rennet must provide for a preparation that will pass through a filter within a reasonable time and produce a bright filtrate—that is, an infusion not of a glairy or ropy consistence; and further, a finished article that will keep bright and sweet for a considerable time. The following formula is the result of experiment, and provided the calves' stomachs are in proper condition, the resulting essence leaves nothing to be desired.

As the stomachs vary in size and rennet-value, it is advisable to treat three or more at a time. They should be dry and preserved with salt; the proper article is obtainable from any reliable butcher.

For three stomachs, take of—

Salt	15	ounces.
Boric acid	¾	ounce.
Rectified spirit	15	ounces.
Water	150	,,

Open the stomachs and retain as much of the salt as will adhere to the inner surface, cut into small pieces, and macerate for about an hour, with frequent stirring or shaking, in 50 ounces of water in which 5 ounces of salt is dissolved; strain through muslin and repeat maceration twice with same quantity of brine, dissolve the boric acid in the mixed strained liquors, add the spirit and filter.

Without the addition of some such medium as kaolin, filtration through paper is very slow, and the first few ounces that pass must be returned. With about an ounce of kaolin or precipitated chalk diffused through the essence, and a double filter-paper supported in the funnel by tow and moistened with water, filtration is fairly rapid, and only the first two or three drachms of filtrate slightly turbid. Prepared as above the colour of the essence is objectionable; it varies from a very pale straw tint to what is practically colourless. For this I have found a simple remedy in merely bringing up the colour to a pronounced straw by the addition of a very small quantity of saffron. One drachm of the essence is sufficient for a pint of milk, and if stored in bottles that are full and well corked, a fairly firm curd will be produced by the same quantity, though the rennet be ten or twelve months old. By re-maceration sufficient exhaustion is effected in a few hours, and this seems to be the principal factor inproducing a preparation free from "ropiness."

The President said the paper was of considerable interest to pharmacists who had to make a preparation of rennet that was bright, clear, and active. The great point was that the dry rennet preserved the curdling ferment for a considerable time.

Mr. Umney said he had had occasion to filter essence of rennet of a dark colour, and tried filtration through carbon, but the whole of the ferment was taken out.

The President said charcoal would not do. The great point was to test the rennet when it was made. A number of stomachs were inactive, and unless each one was tested as regards its activity, you were apt to get a very ineffective preparation. There was the peptonising as well as the curdling ferment present in the stomach of the calf, but it was the latter only that was wanted for pharmaceutical purposes.

Mr. Groves said the difficulty of filtration might be got over by selecting a proper paper.

The President, in moving a vote of thanks to Mr. Wright, agreed that using a dry rennet got over the difficulty of filtration. If it were used in a fresh condition the solution was so albuminous, that it was hardly possible to filter it; still the selection of a proper paper did help filtration very considerably.

Mr. Brodie (Glasgow) said he had made vinum pepsini from a fresh stomach, and found it would filter. He spread some kaolin over it, which made a very good preparation, but took some time.

The Effect of Solvents on the Analytical Characters of Ginger.

by J. F. Liverseege, F.I.C.

Owing to some anomalies found in the analysis of spent ginger, the author exhausted a sample of ginger by maceration with four solvents, and analysed the original and exhausted gingers by the methods given, with the following results:—I. is the original ginger, II. is exhausted with rectified spirit, III. with proof spirit, IV. with 25 per cent. proof spirit, and V. with water. All figures, except the last line, are on 100 parts composed of 87·7 parts of dry ginger and 12·3 parts of moisture.

The author considers that the simplest way of detecting gross adulteration with spent ginger is to determine the "cold water" and "methylated spirit extracts" by macerating 1 gramme in 50 C.c. of the solvent, evaporating the filtrate to dryness, and weighing the extract.

	I.	II.	III.	IV.	V.
Ash soluble in water	2·4	2·2	1·7	1·1	1·0
Ash soluble in HCl	1·8	2·1	1·8	1·5	1·4
Ash insoluble in HCl	·7	·7	·8	·9	·9
Total ash	4·9	5·0	4·3	3·5	3·3
Alkalinity of soluble ash as K_2O	·5	·5	·4	·3	·3
Ethereal extract	5·5	1·8	3·8	5·3	5·4
Alcoholic extract after ethereal	4·6	2·3	2·3	2·6	3·2
Aqueous extract after alcoholic	5·8	6·4	4·9	3·2	2·4
Cold water extract	**11·8**	**10·5**	**6·8**	**5·9**	**4·7**
25 per cent. proof spirit extract	10·2	9·2	6·1	5·5	4·8
Methylated spirit extract	**6·5**	**2·9**	**4·5**	**5·8**	**5·6**
Ginger dissolved (extract)	—	4·0	4·0	5·1	5·5
Ash dissolved	—	·1	·6	1·3	1·3
Water in air dry ginger	12·3	13·4	14·0	13·4	13·5

This paper having been read by Mr. Naylor,

The President said the object of it was to provide a means of testing whether a sample of ginger was spent or not, as waste products were sometimes put on the market. Public analysts had found that several samples of spent ginger had appeared on the market.

Mr. Wright said in his opinion tests of the kind described in the paper were of very little use. There must be some process for determining the strength of the extract to make such tests of service.

The President said there was a kind of ginger sold by grocers as bleached ginger; it was very attractive to the eye, but contained very little of the active principle of ginger, and in fact was little better than spent ginger.

Mr. Naylor said he had found very great difficulty in ascertaining whether ginger was spent or not.

Mr. Umney had had the same difficulty from the great difference in the amount of extractive matter in various specimens of ginger.

Chinese Opium.

by Frank Browne,

Acting Government Analyst, Hong Kong.

In a previous paper (*Pharm. Journ.*, 1895–6, p. 493) are recorded some observations on the smoking value of Chinese opium. Further testings have been made, and the results of two series of independent observations by experienced Chinese smokers are here recorded:—First series: The Chinese opium extracts have a grassy taste, and are deficient in flavour and strength. Three parts of Indian extract are equal as regards the smoking effect to five parts of the Kwei-chou extract. Yünnan is weaker than Kwei-chou, while Szechuen is the weakest. Second series: The taste (flavour) of Kwei-chou extract is much weaker than that of Patna, and the strength, as regards smoking effect, is one-half that of Patna. The taste of the Yünnan variety is weaker than that of Kwei-chou, and its smoking effect is one-third that of Patna extract. In taste and in smoking effect, Szechuen extract differs but little from Yünnan. The effect produced by smoking either of the Chinese extracts is similar to that from a proportional quantity of Patna extract. *Conclusions:* As regards narcotising power, it is noteworthy that the three opiums yield extracts greatly inferior to Indian extract, although the Chinese opiums have been shown, especially in two varieties, to contain larger quantities of morphine than are present in Indian opium.

This paper having been read by Mr. Ransom,

The President said this was a curious paper. They had had analyses sent by the same gentleman as regards Chinese opium, which showed that the native grown was almost as rich in narcotic constituents, codeine and morphine, as the Indian, but it seemed that the Chinese did not like it as well. Most of the Chinese used the opium in an extractive condition.

Mr. MacEwan said the opium which experienced smokers most esteemed was that containing the least amount of morphine. The problem did not rest upon the supply of Indian opium to China, because that was only smoked by rich people; the poor people smoked the native product and Persian opium, which together amounted to six or eight times the quantity imported from India.

The President said he had come across many, both in England and America, who were addicted to the habit, and had found Indian opium was preferred in most cases that he had investigated.

The Composition of Diphtheria Antitoxin Serum.

BY GORDON SHARP, M.D.

The serum is slightly alkaline in reaction and smells of camphor. Of a bright red colour at first, in the course of three months it loses its brightness and becomes dull brown in appearance. Its composition must vary according to the age of the serum. A serum recently prepared will contain less albumose than one which has been in a bottle for some weeks; hence the analysis can only be held to be approximately correct. Examination of a specimen for proteids revealed the presence of globulins (much), alkali-albumin (much), proto-albumose, hetero-albumose (almost none), deutero-albumose (a trace). Peptone was absent. On treatment with alcohol and microscopical examination, no characteristic crystals could be detected, and no indication could be obtained of the presence of alkaloids. With regard to the active agent in the serum, it would appear to be of the nature of a sugar-forming or diastasic ferment, but none could be detected.

This paper having been read by Mr. Naylor,

The President said the composition of these serums was a very complex physiological problem, which had attracted the attention of many physiological chemists. He hardly thought the Conference could discuss the paper; how to test these things and how they acted was beyond the skill of a pharmacist to determine.

This concluded the reading of papers.

Election of the Formulary Committee.

Mr. Poole then proposed the re-election of the Formulary Committee: Messrs. W. Martindale, W. A. H. Naylor, A. C. Abraham, T. Greenish, T. B. Groves, T. Maben, N. H. Martin, F. Ransom, R. Reynolds, C. Symes, R. Wright.

Mr. Bird seconded the resolution.

The President, in putting the resolution, referred to the good work done by the Committee. He said a lot of the work had been accepted by the British Pharmaceutical authorities as being satisfactory. After the publication of the next Pharmacopœia there would no doubt be fresh matters requiring investigation, which he hoped the younger pharmacists would take in hand. The last work of the Committee had not only been a success from a financial point of view, but had met with general acceptance by pharmacists and the medical profession.

The resolution was passed unanimously.

Presentation from "Bell and Hills' Fund."

The President, on behalf of the Conference, then made the usual presentation of books to the local Association.

Mr. Abraham, in the absence of Mr. Conroy (the President of the Liverpool Association), gratefully acknowledged the gift. He said the books which had been presented when the Conference met in Liverpool twenty-six years ago were very much appreciated, as he had no doubt these would be. The books were valued as much on account of the sources from which they came as for their intrinsic worth.

Place of Meeting for 1897.

Mr. Currie (Glasgow), on behalf of the chemists of Glasgow and the West of Scotland, then invited the Conference to pay a visit to Glasgow next year, which he described as the second city of the empire. It was twenty years since the Conference last visited Glasgow, and there were many present who took an active part at that time. Amongst them that day was the oldest living pharmacist in Scotland—Mr. Robert Brodie. It was quite unnecessary to enlarge on the beauties of Glasgow; besides its many beautiful public buildings there were also many beautiful parks, and last, but not least, there was the romantic river Clyde. When Dr. Symes invited the Conference to Liverpool, he was good enough to say they would see miles of shipping, but if they came to Glasgow they would see miles of ship-building yards from which the ships came. If the Conference accepted the invitation, he could assure them of a hearty welcome. In conclusion, he regretted that the Chairman of the Glasgow Committee was unable to be present that day.

Mr. Martin then moved that the invitation so cordially given by Mr. Currie be accepted with equal cordiality. If all those members who had not kept up their attendance at the Conference as regularly as they might have done would visit Glasgow next year, they would never regret it.

Mr. Wells seconded the resolution. He could not look back to the time when the Conference was in Glasgow last, but remembered with pleasure the trip to Edinburgh five years ago and the hospitality extended to them on that occasion. If that were a specimen of what Scottish hospitality was like, he was sure they would be very well treated in Glasgow.

The President in putting the resolution said he had no doubt that Glasgow would give a hearty welcome to the Conference.

The resolution having been passed unanimously,

Mr. Currie thanked the Conference for their kind acceptance of the invitation.

Mr. Payne (Belfast) said he wished to depart from the ordinary course pursued at their meetings, and to ask them to accept an invitation to go to Belfast in 1898. In giving the invitation he said the members would not see such beautiful scenery anywhere as they would in the North of Ireland, and every effort would be made to make the visit pleasant to all.

Mr. McKnight (Secretary of the Ulster Pharmaceutical Society) seconded the invitation.

The President, in thanking Mr. Payne and Mr. McKnight, said he could not pledge the action of his successor.

Election of Officers for 1896-7.

The following were unanimously selected for the ensuing year, on the motion of Mr. Butler, seconded by Mr. Michael Carteighe:—

President.—C. Symes, Ph.D., Liverpool.

Vice-Presidents.—Walter Hills, London; J. Laidlaw Ewing, Edinburgh; W. F. Wells, Dublin; R. McAdam, Glasgow.

Treasurer.—John Moss, London.

Honorary General Secretaries.—W. A. H. Naylor, London; F. Ransom, Hitchin

Honorary Local Secretary.—J. A. Russell, Glasgow.

Other Members of the Executive Committee.—F. C. J. Bird, London; George Coull, Leith; E. H. Farr, Uckfield; John Foster, Glasgow; Prof. Greenish, London; T. H. Wardleworth, Liverpool; Edmund White, London; J. C. Umney, London; R. Wright, Buxton.

Auditors.—A. S. Buck, Liverpool; W. L. Currie, Glasgow.

Votes of Thanks.

Mr. John Moss then proposed a cordial vote of thanks to the Senate of University College for the use of the theatre for the meetings of the Conference. The building was eminently adapted for the purpose, being airy and well ventilated, and they had all appreciated the comfortable accommodation so kindly placed at their disposal.

Mr. W. G. Cross seconded the motion, which was carried unanimously.

Mr. S. R. Atkins next moved that the sincere and most cordial thanks of the non-resident members of the Conference be given to the Local Committee, and particularly to Dr. Symes, the Chairman, to Mr. Wardleworth, the Local Secretary, and to Messrs. Abraham, Bain and Buck for their efforts in organising the present meeting, and for the very successful manner in which the arrangements connected with it had been carried out. He regretted that time did not permit of his expatiating on this most important proposition.

Mr. Umney seconded the motion, which was carried unanimously.

Dr. Symes, in responding, thanked the members for the great honour they had conferred upon him in electing him to the office of President for the ensuing year.

Mr. Wardleworth also briefly responded.

Mr. J. R. Hill then proposed "That the very hearty thanks of the Conference be accorded to the White Star Company for their kindness in providing the steamship 'Magnetic,' and so sumptuously entertaining the members."

Mr. Hardwick seconded the motion, which was put and carried unanimously.

Mr. Groves next moved "That the thanks of the meeting be accorded to the Liverpool Corporation for granting the use of the Walker Art Gallery for the purpose of the conversazione."

Mr. Butler, of Leicester, seconded the motion, which was put and carried unanimously.

Mr. Tyrer then proposed "That the heartiest thanks of the Conference be accorded to the President for the ability, courtesy, and

zeal with which he had discharged the duties of his office and conducted the business of the meeting." In proposing the resolution, he said Mr. Martindale's presidency at Cardiff five years ago was marked with the same ability and zeal. In conclusion, he wished also, on behalf of the members, to return thanks to Mrs. Martindale for the support she had accorded to the President.

Mr. WARDLEWORTH seconded the motion with the greatest possible pleasure.

The resolution was put by Mr. Tyrer and carried unanimously.

The CHAIRMAN briefly returned thanks. It had given him the greatest pleasure to come to Liverpool. He also wished to thank the Conference for the kind reference to Mrs. Martindale. As it was getting late, the remaining votes of thanks to the hon. secretaries would be dealt with to-morrow.

PROCEEDINGS UNDER THE PHARMACY ACT.

Pharmaceutical Society of Great Britain v. *E. J. Douthwaite.*

On the 23rd instant, at the Sheffield County Court, before His Honour Judge Waddy, Q.C., E. J. Douthwaite, of 84, Ellesmere Road, Sheffield, was sued by the Council of the Pharmaceutical Society of Great Britain for three penalties of £5, under Section 15 of the Pharmacy Act, 1868,

Mr. R. E. Vaughan Williams, instructed by Messrs. Flux, Thompson and Flux, appeared for the Society.

Mr. A. Muir Wilson represented the defendant.

Mr. Vaughan Williams, in opening the case, said that the proceedings were brought under the provisions of the Pharmacy Act, 1868, to recover two penalties of £5 for keeping open shop on the 12th and 20th days of May last for the retailing, dispensing, or compounding of poison, and one penalty of £5 for taking, using, or exhibiting the name or title of "chemist." The proceedings were of great importance, as the Act under which they were brought was passed for the protection of the public from the sale of poison by unqualified persons. The only persons who could sell or keep open shop for the retailing of poison were those who were duly registered under the Act, and whose names appeared upon the Annual Register.

His Honour: Whether they were in practice before the Act or have qualified since?

Mr. Vaughan Williams: Yes. The facts were that Mr. Arthur Foulds was sent by the plaintiff Society to the shop at 84, Ellesmere Road, Sheffield, and on May 12 last he purchased there a bottle of "Powell's balsam of aniseed," and again on May 20 last he purchased a bottle of "Winslow's soothing syrup," both of which contained "morphine," a poison included in the Schedule to the Act. He was not served by defendant personally, but by some one then in charge of the business, and therefore the proceedings were for keeping open shop.

His Honour: Surely if a man has a shop and he keeps persons to serve in it the Act applies?

Mr. Vaughan Williams: Yes. Afterwards the Society's solicitors wrote to the defendant, and he replied, saying: "Since you pulled me up on the former occasion, I have been most particular not to get into your power again," but he ventured to think the evidence would prove otherwise. The third penalty of £5 was for taking, using, or exhibiting the title of "chemist." Upon the Powell's balsam there was affixed a small label bearing the words, "S. W. Spurr and Co., chemists." Over the door of defendant's shop was the name "E. J. Douthwaite, late S. W. Spurr," and the gist of the offence was that defendant was taking, using, or exhibiting the name and title for the purposes of his trade, and he submitted that by so doing had committed the further offence with which he was charged. When the exact words of the Statute were considered, it would be seen that they expressly provided for a case of this sort, and any form of taking, using, or exhibiting such title by an unregistered person was an offence against the Statute. The defendant had also issued a handbill, by which it appeared that he was carrying on a business at 84, Ellesmere Road, and contained the announcement, "Twelve years manager for the late S. W. Spurr, chemist and druggist." Mr. Spurr was a duly registered chemits, but he had been dead since the year 1893, and defendant being an unqualified man, had no right to use or exhibit the title in any form whatever.

His Honour: I did not quite get at the genesis of this bill.

Mr. Vaughan Williams: The bill came from defendant in a letter sent by him to the Society's solicitors in reference to earlier penalties incurred by him. Upon the facts he submitted that the offences had been committed, and the Society was entitled to succeed in this action.

Arthur Foulds, examined by Mr. Vaughan Williams: On May 12 last I went to 84, Ellesmere Road, Sheffield; over the shop appeared the words "The Ellesmere Drug Stores." On the glass panel over the door was the name "E. J. Douthwaite, late S. W. Spurr." Bought a bottle of "Powell's balsam of aniseed"—the wrapper of the bottle was labelled "S. W. Spurr and Co., chemists." On May 20 last, went again to same shop and purchased a bottle of "Winslow's soothing syrup"—the same name and description was over the shop as when I visited it over twelve months ago.

Harry Moon, examined by Mr. Vaughan Williams: I received the bottles produced from Mr. Foulds—they were enclosed in their wrappers—I handed them to the analyst. Defendant had previously paid penalties to the Society.

Ernest J. Eastes, F.I.C, examined by Mr. Vaughan Williams: Had analysed the contents of the two bottles. Powell's balsam of aniseed contained a preparation of opium. He found one-eighth of a grain of morphine, or the equivalent of 1½ grain of opium of British Pharmacopœia strength.

His Honour: These preparations are, I suppose, for the crucifixion of babies?

Mr. Wilson: No, sir, they are to enable their mothers to get sleep at night.

Mr. Vaughan Williams: What was the result of your analysis of the Winslow's syrup?

Witness: I found it to contain 1/10th of a grain of morphine.

Mr. Vaughan Williams: Are the quantities you have given us harmful or dangerous quantities?

His Honour: I do not think we have anything to do with quantity.

Cross-examined by Mr. Wilson: Have known Powell's balsam and Winslow's syrup for some years. They are commonly called patent medicines. They are proprietary medicines.

Thomas Dobb, examined by Mr. Vaughan Williams: I am a wholesale chemist. In October, 1894, my firm opened an account with defendant, and supplied him with goods at 84, Ellesmere Road. Saw defendant at the shop about a month ago. Applied for payment of my account, and he asked for it to stand over.

Mr. Wilson said he called no witnesses, but was simply going to address the Court on the law, and advance certain arguments on the facts. He had four points to put forward: First, that there was no evidence that on May 12, 1896, defendant kept open shop for retailing, dispensing, or compounding of poison as alleged in the particulars. Secondly, that there was no evidence of keeping open shop for the same purpose on May 20, 1896. Thirdly, there was no evidence that on May 12 defendant took, used, or exhibited the name or title of chemist, as alleged in the particulars, and, fourthly, that by Section 16 of the Pharmacy Act, 1868, the making or dealing in patent medicines was expressly exempted from the Act. As to the first two points, he contended that there was no evidence that defendant was tenant of the shop at 84, Ellesmere Road, or that he paid the person who sold the articles, and he submitted it was not for the Court to presume anything. He contended there was not the slightest evidence that on either date the defendant actively or by implication styled himself a chemist. On the old handbills he merely stated that he was twelve years manager for the late S. W. Spurr, chemist and druggist, of No. 3, Ellesmere Road. The point of law under Section 16 was one of the utmost importance to shopkeepers, especially in Sheffield and the neighbourhood. He alleged that it was a popular belief that medicines bearing a Government stamp were patent medicines, but it would appear if plaintiff's case was correct that such belief had no foundation. If these articles were patent medicines they were exempt, but if not, shopkeepers should know they were liable to a penalty of £5 for each bottle they sold.

Mr. Vaughan Williams replied at length on the law, calling the attention of the Court to the decisions in the cases of Pharmaceutical Society *v.* Piper, Pharmaceutical Society *v.* Armson, and Pharmaceutical Society *v.* Fox, and submitted that upon the law as well as the facts plaintiffs had made out their case.

His Honour, in giving judgment, said: There are two questions in this action which have been argued on both sides with great ability. First, as a defence, it is suggested that defendant did not keep open shop on May 12 or 20, and that the evidence given was not sufficient. It appears to me that on the documentary evidence alone I have got reasonable proof that defendant was owner of the business. The intendment can be made against defendant because

he did not go into the witness box; he may say you must prove your case strictly. Was he carrying on business at 84, Ellesmere Road? If he was owner it does not matter whether he conducted the sale himself or by his servant, he is responsible under the Statute. It would be absurd to expect there should be proof that at the precise moment of sale it was defendant's shop, but you have to give reasonably fair evidence that the business was being carried on by defendant. We know it was a business formerly carried on by Mr. Spurr. We have a document sent out by defendant stamped Spurr, chemist, initialled by him, and that alone would be enough to prove it is being carried on by him. But I do not base my judgment entirely on that. I come to the document of March, 1895, dated also from the Ellesmere Drug Stores, 84, Ellesmere Road, written by the man obviously owner of the business apologising for what he had done. The typography is precisely the same in both documents, that which was true in 1895 continued until June 19, 1896, when defendant received a letter from Messrs. Flux. Then there is a letter sent by defendant in reply dated from 84, Ellesmere Road, signed not as manager, in which he says, "Since you pulled me up on the former occasion I have been most particular not to get into your power again." He does not deny that on that day he was not the owner. As a reasonable man I do not see how much closer proof could have been given of the keeping of open shop on the documents alone, but then in addition comes the evidence of the witnesses, particularly Mr. Dobb, and he proves purchase of drugs, payment, demand for payment and no repudiation by defendant. I think the evidence is conclusive. Then comes the point as to these articles being patent medicines, which at first I thought was fatal to the plaintiff's case. The onus of showing they were patent medicines was upon the defence, but after Mr. Williams' argument I have come to the conclusion that they are not patent medicines. I am bound by the authorities cited, and I must give judgment for the three penalties and costs.

Mr. Wilson offered to pay the fine by monthly instalments of 4*s*.

Mr. Vaughan Williams urged that penalites should be made payable immediately to be effective, and pressed with an order for payment forthwith.

His Honour: I am not sure that penalties ought not to be paid immediately, but I order payment of £5 down and £5 a month.

THE BRITISH MEDICAL ASSOCIATION.

Annual Meeting at Carlisle.

The annual museum of the Association is located at the Drill Hall, Swift's Lane, and comprises foods and drugs, medical and surgical instruments and appliances, books, diagrams, and charts, and sanitary and ambulance appliances. Among the exhibits of pharmaceutical interest are the following:—

Allen and Hanburys, London, exhibit their infants' food in three varieties, the first, second, and the malted food, their patented Allenburys' feeding bottle, various preparations of malt—bynin, bynol, byno-hypophosphites, and bynin-amara, and preparations of Izal, a non-poisonous antiseptic. They have in addition a large show of surgical instruments, including a new splint for arm or leg.

Armour and Co., London and Chicago, have a variety of their pepsin preparations, viz., pepsin (both insoluble and soluble), glycerole, tablets, essence, and elixir; also extract of beef, beef juice, desiceated blood, and thyroid preparations.

Bleasdale and Co., York, have a series of fluid extracts, liquors, tinctures, effervescent salts, and coated pills.

Brady and Martin, Newcastle, exhibit a selection of drugs and galenical preparations, elixirs, liquors, tablets, suppositories, and bougies; also "ovoids," for ear medication, surgical instruments and appliances, and a skiagraph apparatus with specimens of the prints produced.

Brand and Co., Mayfair.—Meat essences (beef, mutton, veal, and chicken), concentrated beef-tea, turtle soup, meat juice, lozenges and biscuits, and sauce.

Burroughs, Wellcome and Co.,—in addition to a live sheep under a cage, and a tank containing specimens of live and dead cod, have a large selection of their tabloids, especially those of various animal substances, among which are those of the salivary gland, spleen, ovaries, Fallopian tube, liver, and lymphatic gland, also ophthalmic and hypodermic tabloids, photographic and tea tabloids, and various medicine cases, including several that have seen notable service. They also have a series of therapeutic serums, extract of malt and lanoline preparations, as well as various instruments, including their powder insufflator, oil atomisers, hypodermic syringes, serum syringes (readily sterilisable), and inhalers.

"Camwal" (Chemists' Aërated and Mineral Waters' Association) has two exhibits, one of which is called the "Doctors' Welcome Club," and occupies a room by itself. They have a large selection of aërated waters, including sulphuric lemonade, recommended for cholera.

Christy and Co., Lime Street, show various adeps lanæ preparations, to one of which of lighter colour and less odour than some anhydrous preparations, has been given the name of "alapurin." They also show antrophors (spring bougies), cachets of many colours, christia, and kola preparations, as well as analgen and thyroïodin.

Duncan and Flockhart, Edinburgh, exhibit various chloroforms of their manufacture, also gelatine capsules, coated pills, compressed tablets, fluid extracts, chlorodyne, and extract of malt with milk and with hypophosphites.

Hewlett and Son, London, have a selection of their liquors and mixtures, including mist. damianæ co. and mist. senecio co., also of flexible medicinal capsules, antiseptic pellets, jellies, and cream, and clinical tests, with a convenient cabinet containing the necessary appliances for urine testing.

B. Kuhn, London, shows a variety of chinosol preparations—powder, tablets, soaps, gauze, cotton, etc. This is a non-poisonous and soluble antiseptic and deodoriser. Also papain and various preparations, with ethyl chloride and anestile for producing local anæsthesia.

W. Martindale, 10, New Cavendish-street, London, exhibits a large variety of pharmaceutical preparations and medicinal specialties, principal among which are his nitro-glycerin tablets of several strengths, glass capsules of amyl nitrite, isobutyl nitrite, chloroform, ethyl bromide, ethyl iodide, and ethyl iodide with chloroform; granular effervescent preparations, antipyrin, caffeine, lithium, piperazine, sulphate and phosphate of sodium, and sodio-magnesium aperient, bougies, nasal and urethral; suppositories and pessaries, gelatine capsules, among which are those of bromoform, colchicine, salicylate, creosote, guaiacol, ethylene bromide-phosphorated cod liver oil, Easton's syrup, cascara sagrada, sulphonal, and Gregory's powder; elixirs of coca, cascara, and papain; albuminated and peptonated iron solutions, easily assimilable; liquid extract of malt, gelatin pastilles, hand-made pills and granules, capsules of concentrated and sterilised saline, solution for intravenous injection, medicated tabellæ, or chocolate tablets, including apomorphine, cocaine, erythrol, and strophanthus; compressed moss in sheets, and a number of new medicinal chemicals and alkaloidal salts. Also a case containing a copy of each of the eight editions hitherto published of the 'Extra Pharmacopœia,' and the fourth edition (just published) of 'Coca and Cocaine.'

Oppenheimer, Son, and Co., Worship Street, have a large selection of their palatinoids and bipalatinoids, including those of animal substances and for urinary tests, also of their concentrated liquors, cream of malt and pepsine, as well as nebulisers and vaporisers. They also exhibit various serums prepared at the Pasteur Institute in Paris.

Parke, Davis, and Co. show a variety of fluid extracts, normal liquids, coated pills, hypodermic and ophthalmic tablets, gelatin capsules, pepsin preparations, and Mosquera's food products.

Reynolds and Branson, Leeds, show a variety of their sundries, such as dust-proof drawers for dressings, bandage and pill box shoots, enema cupboards and clips, bacteriological apparatus, aantern slides, a post-mortem hammer (silent), Röntgen's apparatus, send sparkling Puritzer, an aërated distilled table water.

Sanitary Wood Wool Co., Thavies Inn, exhibit their various preparations, wood wool wadding, tissue, sheets, towelettes, ponges, vaccination pads, etc., also sublimate lotiforms, gauze, atgut, and absorbent wool.

Woolley, Sons, and Co., Manchester, have several chlorodynes, emulsions of hypophosphites with petroleum, with pepsine, and with cod liver oil, liquors, syrups, pills (pearl-coated), gelatin capsules, compressed pellets, bougies, pessaries and suppositories, granular effervescent preparations, phenate of soda preparations, sanitary rose powder, inhalers, and various surgical apparatus, including an "*x*"-ray outfit.

CORRESPONDENCE.

All Articles, Letters, Notices, and Reports intended for publication in the Journal, Books for Review, and communications respecting Editorial matters generally must be Addressed "Editor, 17, Bloomsbury Square, London," and not in any case to individuals supposed to be connected with the Editorial Staff. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

Any Instructions from Members, Associates, and Students of the Pharmaceutical Society, with reference to the transmission of the Journal, should be sent to the Secretary — Mr. Richard Bremridge,— 17, Bloomsbury Square, London.

Business communications—including advertisements, orders for copies of the Journal, and instructions from Subscribers respecting transmission of same—must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London. Cheques and money orders should be made payable to "Street Brothers."

Correspondents who wish notice to be taken of their communications must write in ink, on one side of the paper only, and should authenticate the matter sent with their names and addresses—of course not necessarily for publication. No notice can be taken of anonymous communications.

Drawings for illustrations should be executed twice the desired size; clean, sharp lines being drawn with a pen and liquid Chinese ink. Shading by washes is inadmissible. Photographs can be utilised in certain cases.

Retail Price Lists.

Sir,—I am of opinion that some alteration in the prices should take place both in the Liverpool chemists' and Midland chemists' lists. Whilst bearing in mind that inferior preparations, as a matter of fact, are made to meet the competition of the "companies," one cannot always convince customers of the fact. It is but professional to support a listed price, but one often fails to do so and at the same time to meet the present unfair competition—thus causing friction between those who should strive to maintain high-class pharmacy in every sense of the word.

Leamington. An Old No. 5.

Note on Analysis of Cream of Tartar.

Sir,—I am obliged to Mr. Archibald Kitchin for calling attention to the very curious error in my proposed process for the analysis of cream of tartar. The facts are correctly stated in the earlier part of the paper (as published in the *Analyst* for July, p. 174), but are reversed in the subsequent description of the process. Of course, it is true that a sample containing calcium tartrate will give, on ignition and extraction of the residue with water, a solution less alkaline than that yielded by pure bitartrate of potassium, but it is incorrect to say that such solution will be less alkaline than the original sample was acid.

I do not agree with Mr. Kitchin that sulphides are liable to be formed in appreciable amount on igniting sulphated cream of tartar at a dull red heat, as prescribed. In an actual experiment made to test the point, no trace of sulphide was formed. As a precaution, the residue may be treated with a little hydrogen peroxide. The following is a revised version of process 2*a*, which I trust will bear criticism better than before:—Titrate the filtrate with decinormal hydrochloric acid and methyl-orange. In a pure sample the measure of acid required will be exactly equal to that of the alkali consumed in process 1. The presence of calcium tartrate in the sample does not affect the results. Each C.c. of deficiency of acid represents 0·36 per cent. of calcium sulphate ($CaSO_4$), or 0 72 per cent. of acid potassium sulphate ($KHSO_4$). Any excess of acid required points to the presence of neutral potassium tartrate, each C.c. of difference representing 0·60 per cent. of that salt. If the titrated liquid be treated with barium chloride, the weight of the precipitate of barium sulphate will give the means of directly determining the proportion of calcium or potassium sulphate. I note that Mr. C. A. Hill, on page 60, was the first to call attention to the effect of calcium sulphate on the B.P. test for cream of tartar. He is right in saying that the use of decinormal alkali for the titration of the original sample involves the use of an inconveniently large volume of the standard solution. If seminormal alkali be employed instead of decinormal, and 3·762 grammes be taken for analysis, each C.c. used for the neutralisation will represent 2·5 per cent. of acid tartrate. In this case the titration will require much care, but the results will be quite accurate enough for most purposes.

Sheffield, July 26, 1896. Alfred H. Allen.

ANSWERS TO QUERIES.

[Queries addressed to the "Editorial Department, 17, Bloomsbury Square, W.C.," will be replied to in the Journal as early as possible after receipt, but the Editor cannot undertake to reply to them through the post, nor is it always possible to publish answers the same week. Questions on different subjects should be written on separate slips of paper, each of which should bear the sender's name or initials. Readers requiring working formulæ for special preparations, and intimating their wants to the Editor, will be assisted as far as may be practicable. The word "parts," when used in formulæ, invariably indicates parts by weight.]

Tincture of Horse-Chestnuts for Hæmorrhoids.—The whole seeds bruised are used to make a tincture 1 in 10. The author does not give the strength of the spirit to be employed; we are informed that proof spirit will exhaust the drug thoroughly. [*Reply to* "A. A."]

Reaction in a Prescription.—In the prescription reading:—

℞ Plumbi Acet
Alum. Sulph ..... aa ℥ss.
Aquæ ..... ℥xv.
Misce. filter and add
Aquæ ..... ℥x. ft. lotio,

as the second name is somewhat ambiguous, it is possible the prescriber intends ordinary "alum," the double sulphate of aluminium and potassium or of ammonium to be used. "Alum. Sulph" is not an official synonym for alum but is a correct abbreviation for the neutral sulphate of aluminium. This salt is used in a similar manner in the German Pharmacopœia to produce the liquor alumini acetatis. This is apparently what should be used here, for that is what has been ordered. The reaction which takes place is represented by the following equation:—

$$\left.\begin{matrix} Al_2 3SO_4 \cdot 18H_2O \\ 666 \\ 3Pb(C_2H_3O_2)_2 3H_2O \\ 1137 \end{matrix}\right\} = \begin{cases} 3PbSO_4 \\ \\ Al_2(C_2H_3O_2)_6 + 21H_{21}O \end{cases}$$

Thus you see that 666 parts by weight of aluminium sulphate will precipitate 1137 parts by weight of lead acetate; in your prescription, calling for 240 grains of each, the whole of the lead will be thrown down as sulphate, the aluminium sulphate being in excess. Since 1137 grains of lead acetate use up 666 grains aluminium sulphate, 240 grains of lead acetate will take $\frac{240 \times 666}{1137} = 140{\cdot}6$ grains.

You start with 240 grains, so you will have $(240 - 140{\cdot}6) = 99{\cdot}4$ grains of sulphate of aluminium in solution, as well as acetate of aluminium, the amount of which you can calculate from the above equation. The lead is wholly precipitated. If ordinary alum were ordered, the reaction would of course be similar with the formation of some acetate of the alkaline base existing in the double salt. [*Reply to* Apprentice.]

F. Williams.—*Galega orientalis.*

"Albert."—*Agrimonia eupatoria.*

OBITUARY.

Kirkby.—On July 8, Robert Kirkby, Pharmaceutical Chemist, of Ramsbury. (Aged 45.)

Reed.—On July 10, Johnson Reed, Chemist and Druggist, of Newcastle-on-Tyne. (Aged 65.)

Doughty.—On July 17, James Doughty, Chemist and Druggist, of Chester. (Aged 57.)

Clarke.—On July 22, George B. Clarke, Chemist and Druggist, of Woburn. (Aged 68.)

Cannell.—On July 23, William Cannell, Chemist and Druggist, of Wolverhampton. (Aged 57.) The deceased, who was a native of the Isle of Man, had been connected with the Society as an Associate since 1868. The sad event occurred quite unexpectedly. He was very highly respected in Wolverhampton, where he had been in business about 25 years.

Buck.—On July 24, Alfred Buck, Chemist and Druggist, of Runcorn. (Aged 68.)

Davidson.—On July 26, Charles Davidson, Pharmaceutical Chemist, of Aberdeen. (Aged 84.)

Communications, Letters, etc., have been received from Messrs. Abraham, Anning, Bird, Bennett, Bransom, Burroughs, Carris, Dunlop, Edisbury, Evans, Fabrik-von-Heyden, Griffin, Grimble, Heaver, Henry, Hornsby, Kent, Mair, Martindale, Philp, Reynolds, Richards, Tyrer, Wellcome, Young.

ON A NEW KINO IN SPECIES FROM MYRISTICA.

BY EDWARD SCHAER.

At the beginning of the present year, Professor Warburg, of Berlin, kindly forwarded to me a sample of an extract or secretion resembling official kino, which, with well-known liberality, had been put at his disposal by the director of the Royal Gardens and Museums at Kew. The sample in question, labelled "Kât jadikai," that is to say, "Cutch-like product of jadikai" (Tamil name for *Myristica*) and known to be produced by incisions in the bark of *Myristica malabarica*, Lam., in South India, showed in its exterior appearance more direct analogy to the well-known Malabar kino than to the "Kâts" of Acacia (Cutch) or of Nauclea (Gambier). It consisted, like officinal kino, of smaller or larger angular transparent pieces, of a deep garnet colour in thin fragments. It was not altogether unlike small broken dragon's-blood in some respects, and the latter name has been used sometimes by natives and merchants for some kinds of kino (from *Pterocarpus draco* and *P. erinaceus*).

Not having been acquainted before that time with kino-like products from the genus *Myristica*, and following the suggestion of Professor Warburg, who was then preparing a monograph of the Myristicaceæ, I at once proceeded to a closer examination of the new substance; availing myself of the latest observations concerning the natural history of the different kinds of kino, especially of the drug derived from *Pterocarpus marsupium* (Malabar kino). Not only in its external appearance, but also in its behaviour to water and other solvents, the "Kât jadikai" or kino from *Myristica malabarica* agreed almost entirely with *Pterocarpus* kino, giving a reddish, slightly turbid solution of feebly, but perceptibly, acid reaction to litmus paper. The other physical qualities, for the most part, proved to be the same as those describe in Hanbury and Flückiger's 'Pharmacographia,' II. Ed. (1879), p. 195. The same may also be stated concerning the more important and characteristic chemical reactions, when compared with the chemical behaviour of official kino. In this respect I do not intend to enter into full details in the present note, the less so, as an exhaustive examination of this new kino will depend on a much larger supply of the drug. It may suffice, therefore, to mention the most striking reactions which the *Myristica* kino shares, without perceptible difference, with the drug of *Pterocarpus*:—

1. The reddish solution of the *M.* kino in cold water does not show at first any alteration on addition of a solution of a ferrous salt (sulphate); but a deep violet colour appears, as soon as the neutralisation of the more or less acid liquid, either with an alkaline acetate or diluted lime-water, has been effected.

2. The same, or a very similar, violet coloration is observed when the aqueous kino solution is shaken with iron reduced by hydrogen, and then filtered; the liquid obtained in this way is not altered by warming and evaporation, whereas similar solutions prepared with catechu rapidly turn green by warming in the open air ('Pharmacographia,' p. 196). The violet-coloured solution is decolorised by acids, and then assumes a red colour on adding diluted caustic alkalies or alkaline carbonates.

3. Inorganic acids, as well as soluble chromates and several metallic salts—as, for instance, lead, and copper acetates—produce abundant amorphous precipitates in the aqueous solution, consisting of the metallic compounds of kino-tannic acid or an acid closely allied to the latter.

4. The aqueous solution turns distinctly green on addition of a small quantity of ferric chloride dissolved in water or alcohol. In this reaction the ferric salt is reduced to the ferrous state, as is shown by adding to the diluted green-coloured liquid a few drops of a solution of potassium ferricyanide, this reagent causing a deep blue coloration or precipitate.

5. Neither diluted acids nor solutions of alkalies produce sensible changes of colour in the aqueous or alcoholic solutions of kino; yet the pale brown precipitate (kino-tannic acid) produced by acids in the aqueous kino solution, after washing out the acid liquid and then again dissolving in water, deposits a red sediment (kino-red) on evaporation of the solution at 100°. The same substance—soluble with a fine deep raspberry colour in alcohol—is likewise formed as a sediment, when kino is boiled for some time with a double or triple quantity of diluted hydrochloric acid (sp. gr. 1·03—1·05) and then allowed to cool. In all the above-described chemical reactions the new kino "Kât jadikai," the dried juice of the bark of *Myristica malabarica*, behaved so much like true *Pterocarpus* kino, that I was first induced to think there had been some mistake or confusion in sending the drug from East India to the Kew Museum. Also the amount of ash (1·1 per cent. as the average of several determinations) was quite analogous to the amount of inorganic residue found in the better qualities of commercial genuine Malabar kino. Only in two respects was a negative result obtained in comparison with *Pterocarpus* kino, and also with certain kinds of *Eucalyptus* kino, that is to say, the substance in question neither yielded to ether even the smallest quantity of an organic compound of the quality of catechin or pyrocatechin (cf. 'Pharmacographia,' 1879, p. 196), nor was it possible to obtain any crystals of the kinoïn of Etti, by exhausting with ether the kino solution first heated for some time with hydrochloric acid.

Under these circumstances I thought it advisable to apply to the government's botanical garden of Buitenzorg (Java), for samples of the inspissated secretions of the barks of either *M. malabarica* or other species of *Myristica*, and to compare such samples with the "Kât jadikai" received from Professor Warburg, and afterwards, in smaller quantity, directly from Kew, by the kindness of the director of the Royal Gardens. The samples, which were sent to me a few weeks ago, and for which I am highly and gratefully indebted to the director, Dr. M. Treub, as well as to the assistant-director, Dr. P. van Romburgh, consisted of small portions of the still liquid juice of the bark of (a) *Myristica glabra*, (b) "kapoeas," from *M.* species, and (c) *M. succedanea*, as well as of a few grammes of dried kino-like substance drawn from *M. fragrans*, which I received within the last few days.

The examination, conducted in the same way as that of the special sample, "Kât jadikai," from Kew, showed very soon that the three liquid kinos agreed completely in all the five reactions discussed above with the concentrated aqueous solution of the dried juice of *M. malabarica*, of Kew, exception being made with regard to a very curious turbidity and micro-crystalline sediment, which was removable by filtration. The three filtered juices, by careful evaporation at temperatures of 50° to 70° C., gave dry residues quite similar in every respect to the first examined "Kât jadikai," while the same liquids, evaporated without previous filtration, formed a much paler residue. These last-mentioned kino-like dry residues presented the same appearance of a pale reddish-brown extract as the dried bark juice of the officinal *Myristica fragrans* kindly forwarded by the directors of the Buitenzorg Gardens.

Yet, in spite of the far-reaching physical and chemical analogies existing between the officinal *Pterocarpus* kino and the substance drawn from the different *Myristica* species, and therefore to be called *Myristica* kino, a very striking difference has already been signalised by Dr. van Romburgh, and further confirmed in the research carried out in my laboratory as far as the modest quan-

tities of the new liquid and dry kinos would permit. The liquid juices of *M. glabra*, "kapoeas," from *M.* species and *M. succedanea*, as well as the liquid obtained by shaking and dissolving the dry kino of *M. fragrans* with a ten-fold bulk of water or weak alcohol, appeared very turbid after short agitation; observed with the microscope they showed in great number larger prismatic or smaller needle-shaped crystals, which deposited as a whitish micro-crystalline sediment when the juices were allowed to stand for even a short time. The crystals were much more abundant and conspicuous, as may readily be imagined, when the dry inspissated natural juices were dissolved in a little water or diluted alcohol and then placed under the lens. In this way it could be shown that even the pretty translucent "Kât jadikai" of Kew (*M. malabarica*)—probably obtained by evaporation of an already sedimented juice?—contained an appreciable number of the above-mentioned crystals, and ought, therefore, to be considered as a genuine "*Myristica* kino."

This crystalline sediment, however, was not, as might perhaps have been supposed, an organic compound of some affinity to the substances eudesmin and aromadendrin, lately observed by Maiden and Smith in several kinds of myrtaceous kinos of Australia (cf. *Pharm. J.* [iv.], vol. i., p. 261, September 28, 1895), but proved to be of partly inorganic character, a fact which at once could be deduced from its behaviour on platinum foil, insolubility in alcohol, and solubility in several reagents. The nature of the micro-crystalline constituent of the liquid *M. kino* had already been notified in a letter received from Dr. Treub, of Buitenzorg, dated May 12, which contains the following communication: "Dr. van Romburgh tells me that these juices deposit a white crystalline substance, which seems to be the magnesium or calcium salt of an organic acid. But he has not yet got a sufficient quantity of material for a thorough examination." The presence of a micro-crystalline deposit, as already mentioned, could be observed in all the samples of kino, but was most conspicuous in the case of the juice of *M. succedanea*. Thinking it rather doubtful whether there would be any opportunity in Buitenzorg for collecting a sufficient quantity of *Myristica* juice, or of its crystalline sediment, for the purpose of a chemical analysis on a larger scale, I judged it worth while to attempt to determine the chemical nature of the scanty deposit isolated from the liquid kino of *M. fragrans*, by making use of the crystallographic and optic appliances of this university.

After having shown with some degree of certainty that the crystals of the deposit consist of an organic calcium salt, decomposable by mineral acids, and yielding by treatment with diluted sulphuric acid the very characteristic cross-like bundles of needle-shaped prisms of calcium sulphate; and secondly, that according to their chemical behaviour and their crystalline form they could not be calcium oxalate, but rather showed the greatest analogy to a calcium tartrate artificially prepared from Rochelle salt and calcium chloride, I forwarded the remaining small quantity of crystals to my friend and colleague, Dr. H. Bücking, professor of mineralogy at Strasburg, who had kindly offered his co-operation in settling the question by transforming the crystals into the optically well-definable and characteristic salts, barium tartrate and antimonyl-barium tartrate [$Ba(SbO)_2 \cdot (C_4H_4O_6)_2 \cdot 2H_2O$]. The result of his examination was the discovery that the crystals isolated from *Myristica* kino and the artificial calcium tartrate (neutral salt) both equally formed the sphærolithic and feathered bundles of the first-named barium salt, as well as the partially six-sided and partially rhombic plates of the antimonyl-barium salt. The kino crystals ought therefore to be considered as calcium tartrate. However, notwithstanding the fact that the chief bulk of the crystalline deposit of the *Myristica* juice consists of the mentioned calcium salt, the observation that the crystals do not seem to be soluble entirely without the slightest residue either in cold solution of potassic hydrate or in diluted acetic acid, makes it not wholly improbable that the said deposit may perhaps contain a small admixture of calcium oxalate, which is so widely spread in the cellular tissues of plants. This question will have to be settled at some future occasion. I am not aware that, besides calcium oxalate, sulphate, phosphate, and carbonate (occurring in amorphous form in the so-called cystoliths), calcium tartrate has been very frequently found as a crystalline secretion in vegetable organs, since the observation of Schimper, who proved its existence in the leaves and petioles of *Ampelopsis* and of *Vitis*, especially of *V. lubrusca* Consideration of the well-known presence of soluble tartaric salts in fruits and other parts of plants, leads one to think that a frequent secretion of crystallised calcium tartrate would not seem improbable.

The results of the foregoing investigation may be summed up as follows:—

I. The dried juices of the bark of several Asiatic species of *Myristica*, for instance, of *M. malabarica*, Lam., and *M. fragrans*, Houtt,* as regards their appearance and physical qualities, show but little difference from the officinal Malabar kino.

II. These substance, which may be termed "*Myristica* kinos, agree, in the chemical reactions due to their constituents, in all important points, with the kino of *Pterocarpus marsupium*. It can therefore be stated that drugs of a very similar character, and partly of close resemblance to official kino, are to be found in the families of Leguminosæ (*Butea*, *Pterocarpus*, *Milletia*), Saxifragaceæ (*Ceratopetalum*), Myrtaceæ (*Eucalyptus*, *Angophora*), and Myristicaceæ.

III. The *Myristica* kino differs, as far as can be observed, from the *Pterocarpus* kino, and probably also from *Butea* and *Eucalyptus* kino, by containing, in the crude state of the inspissated fresh juice, smaller or larger amounts of a distinctly crystalline calcium salt, viz., calcium tartrate, suspended in, and depositing from, the liquid juice. By this characteristic admixture it can be easily distinguished from the official kino and probably also from other kinos of commerce.

Whether this new substance might ever be obtained in combination with the production of nutmegs and mace, so as to play the part of a commercial drug, will depend, above all, upon a still better knowledge of its qualities, its formation in the living plant, its quantitative relations, and similar questions. Perhaps it may be possible, at another date, to give some more particulars, as I hope to do, in connection with Dr. van Romburgh, who has been first to observe the peculiar micro-crystalline character of this *Myristica* kino.

Jambul in Diabetes.—The value of jambul in the treatment of diabetes has been confirmed by Colasante (*Therap. Woch.*), employing the drug in four forms, the powder of the fruit and of the bark, and the fluid extract of these two parts, in daily doses of from 10 to 100 grammes. All are equally efficacious, but the fluid extracts are more pleasant to take, the larger doses of the powders sometimes giving rise to a slight diarrhœa, otherwise no ill effects were observed in any case. All the cases treated showed a general improvement, with increase of weight and of strength. The volume of the urine secreted, and the amount of sugar in it, diminished markedly, the glucose sometimes disappearing almost completely (*Rev. de Thérap. Méd. Chirurg.*, lxiii., 92).

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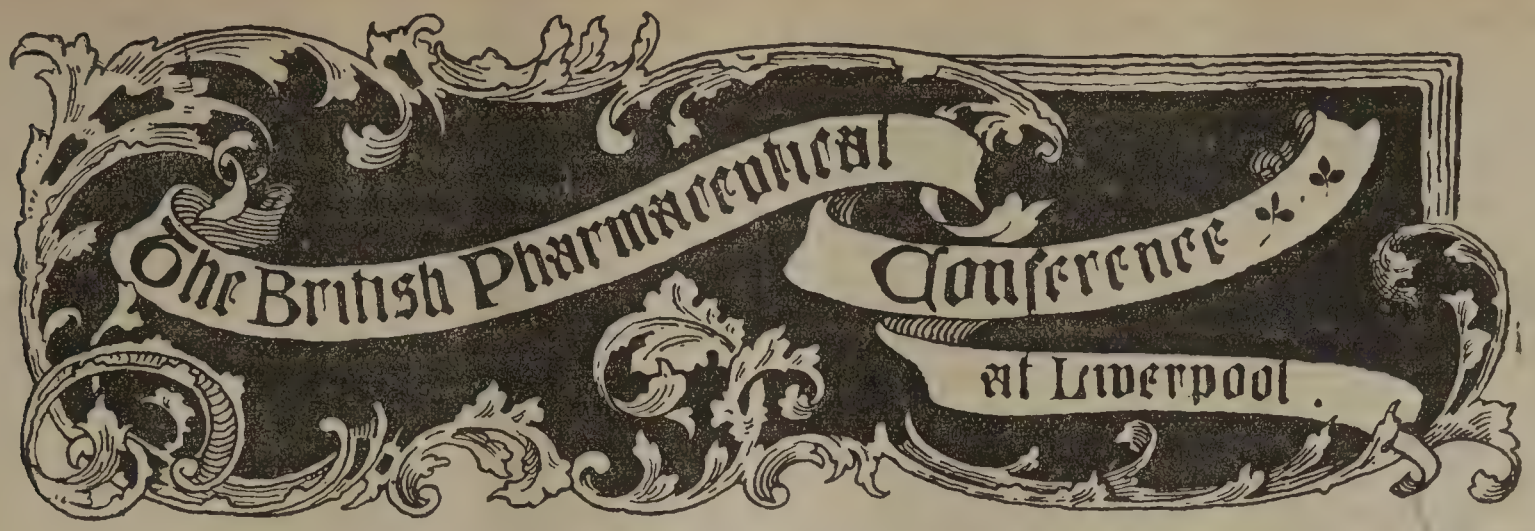
* In Watts' 'Dict. of the Econ. Prod. of India,' vol. v., p. 314, it is stated that *Myristica longifolia*, Wall., an evergreen tree of Sikkim, Khasia Hills, Assam, Pegu, and Tennasserim, according to the botanist Kurz, "exudes a red resin." The writer would be obliged for any sample of this substance, in order to compare it with the other *Myristica* kinos mentioned in this paper.



Echoes from the Thirty-Third Annual Meeting.

THE LUNCHEON AT CHESTER was served in a style reflecting the greatest credit upon Messrs. R. Bolland and Sons, of Chester, the caterers, the smartness of the waiting and the tasteful manner in which the tables were decorated—to say nothing of the excellence of the cuisine—impressing the visitors in the most favourable manner. Dr. Symes, the newly elected President of the Conference, was in the chair, supported by the Mayor of Chester (Mr. C. Roberts), Alderman Chas. Brown, Dr. Stolterfoth, and Mr. Edward Evans, jnr.

A BRIEF TOAST LIST followed the luncheon as usual, and this particular occasion was signalised by the list of eminent names associated with the toasts. The Chairman proposed the health of the Mayor and Corporation of Chester, thanking them for the use of the Town Hall. This having been replied to by the Mayor and Alderman Brown, the toast of the ex-President was next given, and met with a splendid reception, which bore witness to the high estimation in which the members hold Mr. Martindale, and their appreciation of the manner in which the presidential duties had been performed by him. Mr. Martindale briefly replied, and then gave the toast of the "Pharmaceutical Society of Great Britain." That body he characterised as a Society which excluded from its ranks none who showed their fitness for membership, and he exhorted his hearers to strive to the utmost to maintain the dignity and honour of their craft, whether it was called a trade or a profession. Mr. M. Carteighe responded, and said he would emphasise the advice given by Mr. Martindale and, going even further, say to his hearers—never let a pharmacist do that which is mean or ungentlemanly, but let him try to be competent in the highest meaning of the term, following his calling with a true professional feeling. Depend upon it, he added, if we all strive in this direction we shall soon see the day when pharmacy will be respected by the people, and appreciated by other professions to the extent it deserves. The toast of the "Pharmaceutical Society of Ireland" was next given and responded to by Mr. Wells, after which the local committees at Chester and Liverpool were thanked for their successful efforts to cater for the amusement and comfort of the Conference visitors.

EATON HALL was visited after luncheon, being approached through Grosvenor Park and Eaton Park, both of which are, as may easily be imagined, typical specimens of the class of carefully kept parks that surround most of the ancestral homes of England. Numerous herds of young deer were seen under the shade of the great trees, and coveys of pheasants and partridges were peacefully feeding by the side of the road, too tame to be regarded in the light of game, and looking as if there were no such things as guns or sportsmen in the world. The present Hall is very different to that first existing on the spot, built by Sir Thomas Grosvenor, the third baronet. That was from the design of Sir John Vanbrugh, a Cheshire architect and poet, noted for his eccentric ideas of design, which prompted Swift to dub a house Sir John had built for himself "a goose-pye." Vanbrugh's building was so unsuitable, that in an attempt to remedy it by Porden it was nearly demolished, the entrance hall and saloon with a vaulted basement being all there is now left of the original. In 1870, Mr. A. Waterhouse, R.A., commenced to reconstruct the entire edifice, and after fifteen years succeeded in completing the Hall as it now stands—a veritably magnificent palace. The first object meeting the view on entering the courtyard was a spirited group in bronze of a groom with a rearing horse, by the late Sir J. E. Boehm, R.A. The stables on the right and left were pictures of neatness and cleanliness, with glass doors, polished fittings, and very efficient ventilation. The chapel contains many beautiful mosaics and stained glass windows, and the tower a carillon of pure tone and good compass. A novel decoration of the walls of the saloon attracted much notice. It is by Mr. H. Stacy Marks, R.A., representing the Canterbury Pilgrims of Chaucer. An adjoining room, called the Bird Room, is also painted by Mr. Marks with a series of his justly celebrated bird pictures, which are very life like and true to nature. Some few favoured members managed to obtain a view of the two pictures by Rubens—"The Adoration of the Magi" and the "Fathers of the Church." The latter was bought by the first Marquis of Westminster in 1818, and is one of the six pictures carried off by the French from Madrid in 1808. By the breaking down of a waggon they were thrown into a ditch, receiving an amount of rough treatment, of which the picture in question bears unmistakable evidence. An extensive library of some 12,000 volumes, in addition to many costly works of art housed in a beautifully decorated room, received a good share of attention, the interest of the lady visitors being centred in the fine pottery, inlaid wood work, and multitudinous art treasures with which the corridors were filled. Taken as a whole, the general opinion of the visitors was that to even cursorily examine a tenth part of the interesting objects with which the Hall is filled would require at least a dozen visits. The hot-houses were also thrown open for inspection, and proved another treat, as they were like everything else at Eaton, on a truly magnificent scale.

Hawarden, the last place visited by the excursionists, proved most interesting of all. The visitors on reaching the grounds of the Hawarden estate, descended from the coaches and walked through the woods in the direction of the Castle, encountering on the way several sharp thunder showers, which, however, were of only short duration. On reaching Hawarden Castle, about 5 o'clock, many lingered with a hope of catching a view of Mr. Gladstone on his way from evensong at the village church, whilst others rambled about the ruins of the old castle hard by, famous as being the place where the Earl of Leicester, after making prisoners of Henry III. and his son Edward, agreed to surrender the sovereignty of Wales to Llewellyn. The Welsh took the castle by surprise on Palm Sunday, 1282, and Llewellyn's brother—David—made the owner, Lord de Clifford, prisoner. The Stanley family held possession of the Castle until the Commonwealth, when it was confiscated, and in 1651 passed into the possession of the Glynne family—its present owners. The village was reached about 5.30 p.m., and a good many of the early comers caught sight of Mr. Gladstone on his way home, saluting him with hearty cheers. Tea was served in a marquee opposite the Glynne Arms, in a pretty garden, and was done full justice to by the visitors after their somewhat hot and tiring walk across the park. Mr. Wardleworth announced that Mr. Gladstone would receive the visitors on the terrace in front of the Castle after tea, so after a few speeches by Dr. Symes and others, and sundry votes of thanks to Mr. Wardleworth and Dr. Symes for their efforts to entertain the members of the Conference—efforts which it is only right to say were crowned with well-merited success—a movement was made in the direction of the appointed spot. Strolling along towards the rendezvous at the Castle, the well-kept state of the grounds was the subject of much favourable comment, and the general effect of the efforts of Mr. Gladstone's landscape gardener in beautifying the lawn and terrace was much admired. A deputation consisting of Dr. Symes, Mr. Atkins, Mr. Edward Evans, jnr., and others was to be introduced to Mr. Gladstone, whilst the other members collected near the terrace, upon which the veteran statesman soon appeared, assisted by his daughter, Mrs. Drew.

Eaton Hall, Seat of the Duke of Westminster.

Mr. Gladstone, as he sat down on a chair, laughingly excused himself for having to yield to the weakness of advancing years instead of receiving the deputation standing. He then inquired how the party had spent the day and by what route they had arrived at Hawarden, chatting in a kindly manner, and expressing his satisfaction that they had been favoured with such fine weather. Mr. Martindale thanked the right honourable gentleman for having granted permission to the members of the Conference to visit the park and grounds, and for having so graciously received them. The retiring President gave occasion for an outbreak of merriment by saying that, whilst the members all revered Mr. Gladstone as a scholar, they admired him as a politician—"most of them," he hastened to add. At any rate they all agreed in hoping that he would long live to be an honour and glory to the country which he had done so much financially and politically to bring to the position which it had gained during the reign of Her Majesty the Queen.

Mr. Gladstone caused a renewal of the laughter when he said, in reply, that those members of the Conference who might not agree altogether with the course he had pursued in politics need be under no apprehension of his doing any more mischief. Although he was still a politician, he was to all intents and purposes a dead politician. He held two impressions with regard to their particular body; one was that during his lifetime there had been a very great advance in their profession, by increasing knowledge, and improving the education of those who conducted the chemist's business. It was really a wonderful thing, considering the millions and millions of prescriptions made up, that so very few mistakes occurred. So far as he was personally concerned, he had never been the subject of such a mistake, although he had lived long enough to run the chance of it. His other impression was that chemists as a body were very united, for he remembered that about sixty years ago, when he was member for Newark, some measure or other was introduced into the House of Commons, which affected chemists and druggists very materially, and he was much struck with the steady fire of opposition directed against the obnoxious measure. Their resistance, so far as he could recollect,

was entirely successful. From a political point of view he did not think that during the last sixty years much harm had been done, and he would be well satisfied if during the next sixty no more mischief and as much good were done. Mr. Martindale here took the opportunity of explaining that the period to which Mr. Gladstone had referred was about 1841, the time of the formation of the Pharmaceutical Society—a body which strove to elevate and educate chemists generally by examination, and by trying to introduce a systematic course of study along definite lines with a view to rendering the pharmacist better equipped with the technical knowledge necessary to the proper prosecution of his calling. Having put a few questions, Mr. Gladstone expressed his pleasure at learning that now every man had to qualify by examination before he could become a chemist. One such gentleman had recently had the courage to plant himself in business in the village of Hawarden, to their no small convenience. The chemists of Chester were very good and skilful, but it was a great advantage to the village to have a chemist nearer to it.

HAWARDEN CASTLE, RESIDENCE OF THE RIGHT HON. W. E. GLADSTONE.

Dr. Symes caused some amusement at this point, by saying: "We all hope most fervently, sir, that you will not have any need to trouble him often." Subsequently, Mr. Gladstone walked slowly back to the Castle, followed by the cheers and hearty applause of the company. The coaches were in readiness close to the Castle, and soon the party was on its way to Chester, the return journey along the somewhat flat road near the Dee being rapidly accomplished. Chester was reached in good time, and the whole party got into Liverpool about nine o'clock, thus finishing an excursion which will long be remembered by those who took part in it for the excellence of the arrangements and the watchful care with which the Entertainment Committee looked after the comfort of its guests.

Messrs. AYRTON and SAUNDERS seem to have given great pleasure to the lady-visitors by throwing the firm's premises open for their inspection. Box-making and glass-blowing were the promised attractions, and many of the ladies carried away with them mementoes of the latter operation, in the shape of fantastically-twisted glass rods and other delicate specimens of the glass-blower's art. But the perfume department possessed a greater attraction, and numerous hearts must have been won by the lavish distribution of sweet-smelling sachets and dainty bottles containing imprisoned floral tributes. From the feminine point of view, this visit seems to have been one of the chief successes of the week.

The CHEMICAL LABORATORIES at University College were thrown open for inspection on the Wednesday morning, and visited by a number of prominent pharmacists; Mr. Prosper H. Marsden, of University College and the Royal Infirmary, acting as guide. All the rooms seem to be well equipped for teaching purposes, but the theatre, in which practical demonstrations are given, received most of the visitors' attention. The library of the College was another centre of attraction, exciting admiration by its admirable arrangements, whilst the noble Arts' Theatre was the scene of the Sessions of Conference. The original object of University College was to make local provision for systematic higher education, and it now supplies the means for a complete university education in all subjects. It is greatly to be hoped that the new scheme, whereby a school of pharmacy is constituted in connection with the College, may be more than justified by complete success.

PRONUNCIATION of many-syllabled words, and especially of some of mixed origin, was a subject that more or less seriously engaged the attention of several leading members of the Conference during the all too brief hours they were able to devote to the practical study of pharmaco*g*-nōsy, the subjects of the demonstrations being mainly the leaves of *Nicotiana tabacum* and the spirit obtained by distillation after fermentation of malted grain from *Hordeum sp.* A very general feeling seemed to exist in favour of the encouragement of authors of papers on topics that tend by their introduction and discussion to enliven the monotony of the sessional meetings. Two such papers, indeed, should quite suffice to maintain the spirits of the most regular attenders at those meetings at a point far above that intellectual zero at which things cease to be "touched by emotion," and that number should not be difficult to arrange for.

The Earl of Derby, who, as Lord Mayor of Liverpool, welcomed the Conference to Liverpool, is in his fifty-sixth year. He was educated at Eton, has been Governor-General of Canada and Secretary of State for War, was called to the House of Lords as Lord Stanley of Preston, in 1886, and succeeded his brother, the fifteenth earl, in 1893. The seat of his lordship is Knowsley Hall, a glimpse of which was obtained in passing by visitors to the Lancashire Watch Factory, Prescot. Amongst the treasures preserved at Knowsley is the chair on which sat James, the seventh earl, while awaiting execution on the scaffold at Bolton, after being captured at the battle of Worcester. His courageous wife, Charlotte de la Trémouille, is a notable character in Sir Walter Scott's novel, 'Peveril of the Peak,' and paintings by Vandyck of her and her unfortunate husband grace the walls of this residence of the present head of the house of Stanley, and descendant of the former Kings in Man.

The Sunlight Soap Works, which employ 2500 persons, were visited on Friday by a party of thirty-seven, conducted by Dr. Symes. The day was fine, and "sunlight" pervaded the works, both within and without. Passing through the office, the visitors were initiated into the mysteries of the printing department, where all the firm's printing is done. The chief attraction here was the production of multi-coloured circulars by a machine which finishes them in one operation. Rolls of paper five miles in length were also viewed with interest as they were printed and automatically cut up into small sheets, then delivered ready for use. In the laboratories some crude glycerin of s.g. 1·300 was noted, and the card box-making department was next arrived at. Here the girls feeding the machines were seen working at almost lightning speed, as though they fully appreciated the value of every minute in the eight hours per day that all the employés work. The wood boxes used for packing, like the card boxes, are also made by machinery, the nails being driven automatically, without hesitation and without accident to anyone's thumb. Engine house, vast timber stores, dynamo house, and warehouse alike testified to the magnitude of the business done, and further testimony of this was afforded at the wharf on an inlet of the Mersey, whence the firm's steamers convey the finished products away. From the top of a lofty tower a magnificent view was obtained of the works and of the village of Port Sunlight, pleasantly situated with wooded heights in the background. Then, descending, the journey was continued through the soap-boiling room and frame room, whilst the operations of cutting, stamping, and packing the soap were all inspected in turn. The model village with its fine Gladstone Hall and schools was seen last of all, and the visitors left with a due sense of having most agreeably combined instruction with very great pleasure.

The White Star Line certainly does properly what it undertakes, if all its enterprises are as well planned and satisfactorily carried to a happy conclusion as was the river trip on the s.s. "Magnetic." One of the most pleasant items in the official programme, it was every whit as successful as if the party had consisted of a score only, instead of the large number who actually trusted themselves on the water; and whilst a capital tea was provided, and gratefully partaken of, there is little doubt that the trippers returned with an enhanced appetite, both for viands and pleasure. Such is the effect of a short water excursion conducted under the best possible conditions.

Knowsley Hall, Seat of the Earl of Derby.

The Electric Railway appealed especially to Londoners and other dwellers in large centres, where less luxurious means of local transit prevail. To feel that the poorest of Liverpudlians can travel with the greatest comfort from Toxteth to Seaforth—a distance of seven miles—for the inconsiderable sum of twopence, and enjoy the health giving sea breezes on the fine sands at the latter terminus, is to realise that, in one respect at least, Liverpool takes the lead in solving social problems. At the same time, the most exclusive could hardly enjoy their after-luncheon cigars better than by taking a run along the docks in one of the well-appointed and commodious first-class cars.

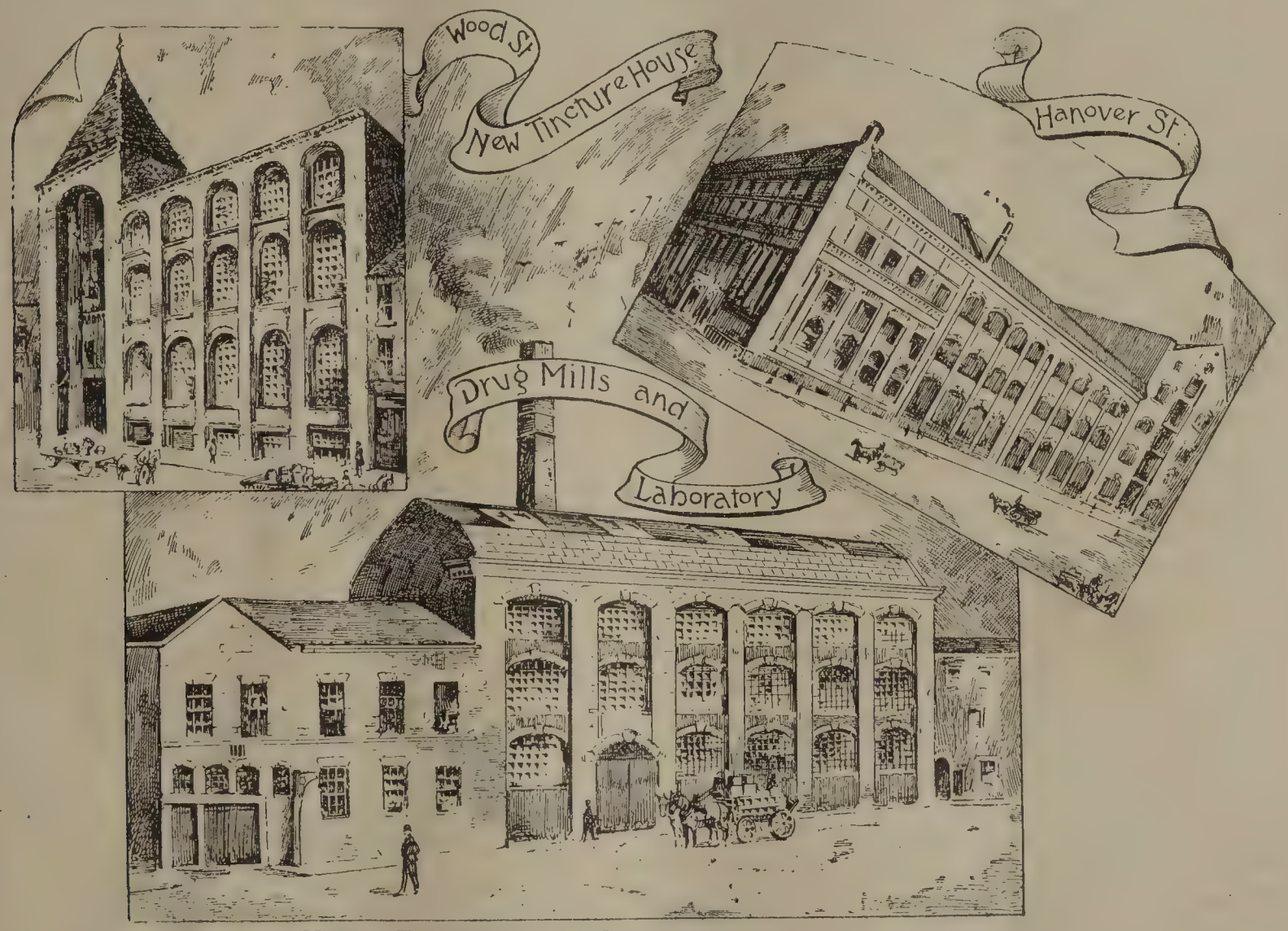
Mr. T. H. Wardleworth and Dr. Chas. Symes were so unwearying in their labours that their friends from afar could enjoy their company intermittently only and then for but a few moments at a time. Everyone realised, however, how much they were indebted to both gentlemen for the organising skill shown in arranging all the details of the meeting. Another old acquaintance—Mr. Michael

Conroy—was able to give pleasure to many who had the good fortune to be permitted to inspect Messrs. Evans, Sons and Co.'s laboratories; Mr. Charles Symes, junior, supplemented Mr. Hardwicke's paper on tablet making by showing a small tablet machine in actual operation; and many other local pharmacists placed themselves unreservedly at the disposal of their fellow-craftsmen, doing the honours of their noble city in a way that required to be experienced in order to be appreciated. No thanks can repay such services; the most that can be done is to wait until the Conference visits one's own town and then go and do likewise.

The Ladies' Committee, consisting of Mrs. A. C. Abraham, Mrs. Bain, Mrs. Conroy, Mrs. W. P. Evans, Mrs. J. Smith, Mrs. Symes, and the Misses Buck and Wardleworth, won golden encomiums from the fair strangers visiting their city, by the great pains they took to administer to their general comfort. The toilet and drawing rooms at University College, which were in charge of Mrs. Lea, were fully utilised, and no greater compliment can be paid to those responsible for the arrangements made for pleasantly and restfully filling up odd hours, when the official programme kept the male visitors engaged with Conference business, than to say that the ladies never seemed fagged or bored, but looked their best and fully interested throughout.

Conviviality was strongly marked at the Liverpool meeting, some small and select parties of individuals hailing from all three kingdoms striving their utmost to establish a record. The proceedings in the smoke-rooms of the Adelphi and other hotels were extra-official however, if pleasant, and must be regarded as supplementary to, and in nowise on the same level as, the Wednesday evening "smoker." The large hall in which the latter was held seemed at one time to be quite filled, and as the night wore on the Chairman—Mr. Michael Carteighe—with his comprehensive nods, mighty frowns, and stentorian voice, might not inaptly have been compared with Olympian Jove, as he sat enthroned midst fleecy clouds of tobacco smoke.

Mr. John Bain, the Honorary Treasurer of the Local Executive Committee, can be heartily congratulated on the programme he provided for the delectation of the very large audience attending the Smoking Concert, while truthful appreciation of the efforts of Messrs. Allen, Bain, Berry, Brinson, Carteighe, Currie, and other performers, was indicated by the applause which freely greeted each new effort, whether humorous or not.



Messrs. Evans, Sons and Co.'s Warehouses and Laboratories.

The Illustrated Handbook, provided by the Editor of this Journal as a handy guide to the Conference proceedings, was in great demand and apparently, therefore, much appreciated. A large edition was printed, but by the end of the week the stock was exhausted, and it is not too much to say that some hundreds more might have been profitably placed. As it was, wherever one went—at reception, business meetings, excursions, or in the streets of Liverpool—this semi-official guide was strongly in evidence, and presumably met a need so frequently felt on such occasions, when time is all too brief to allow of reference to larger guides, and smaller ones supply but a scanty stock of information on the subjects of greatest interest for the time being.

SCHOOL OF PHARMACY.

The Class of 1895-6.

The School of Pharmacy of the Pharmaceutical Society has just completed its fifty-fourth session, and professors and students alike are now enjoying a well-earned holiday. Prior to separating, however, a photograph of the School staff and students was taken, and a reproduction of this is here given.

The number of students attending the classes during the session has been larger than usual, the chemical laboratories having been especially full, and the students have been as steady and hard-working as usual. The proportion of those who passed on presenting themselves for the Minor Examination was larger than has been the case in former sessions, and the School was especially distinguished by the proportionately larger number who were successful at the Major Examination.

The various institutions connected with the School have been well supported during the year, and at the beginning of what may be regarded as a new career for the School, it seems not inappropriate to deal with them in some little detail.

The School of Pharmacy Students' Association has had a most successful session, its success being in large measure due to its genial and active President, Professor Reynolds Green. The Association has served more than ever as a bond of union between the students of the School, and a better feeling all round has existed than has been the case for many years. Nearly all the workers in the Research Laboratory have acted either as officers of, or reporters to, the Association.

The Pharmaceutical Football and Cricket Club has again proved very popular. The football season was very successful, the greater number of matches played being won by the Pharmaceuticals, under their captain, Mr. Fothergill. With regard to the cricket season, although many good games were played and thoroughly enjoyed, the results were not so favourable as those which attended the football matches. Mr. Spurge acted as captain, and the club was fortunate in securing the valuable services of Mr. H. T. Durant, as secretary; he, however, relinquished the duties in February, on account of his departure for South Africa, and Mr. Senter was elected to fill the place, which he occupied for the remainder of the session. In connection with this Club, the annual dinner and smoking concert were both held as usual, and gave great enjoyment and satisfaction.

R. W. Lindsey. G. Senter. W. H. Lester. A. Hanbury. G. Williams. W. Veitch. H. Green. E. Umney. A. Smith. J. Fothergill. J. H. Blyton. G. E. Pearson. E. Spurge. F. Tunbridge. F. Stamp. H. Brice. S. Davis. S. Silver. A. Goode. W. Lean. C. Picken. O. Blackburn. F. Charnock. A. Sheldrake. R. Payne. J. Frith. "Fred." H. Read. T. A. Henry. Harold Brown. S. H. Jones. F. D. Chambers. C. M Battle. Miss E. Hudson. Miss Harrison.
(*3rd row continued*) Miss U. Hudson. W. N. Ellis. H. Wilson. J. A. Dewhirst. H. L. Lee. P. K. Allen. J. Grier.
H. Sturch. E. Goulding. C. Hill. F. Carr. H. Jowett. Prof. Greenish. Prof. Dunstan. Prof. Attfield. J. Lee. Prof. Green. E. Holmes. E. Eastes. W. Moore. C. Ashby, H. J. Daniels. V. Hale. R. W. M. Gibbs. R. W. Chandler. J. S. Turner. C. R. Wellington.

AMERICAN PHARMACEUTICAL ASSOCIATION.

Queries for the Commercial Section.

1. Where is the practice of pharmacy drifting?

2. To what cause is failure due, in attempting to protect our mutual trade interests?

3. Why do a large number of wholesale druggists, and makers of non-secret preparations, supply department stores with drugs and medicines, and violate contract agreements on rebate goods with manufacturers of proprietary medicines, and what course will it compel the retailer to pursue?

4. Under what circumstances is substitution admissible?

5. Is the protection of the trade interests, of the druggists and chemists, by the manufacturer of proprietary goods a possibility; if in the negative, what is our remedy?

6. Is general substitution justifiable?

7. Is it justifiable to purchase unreliable materials for the purpose of increasing profits, thereby injuring the reputation of the physician, and endangering the patient's chance of recovery, thus furnishing physicians with reasons for self-dispensing?

8. Are non-secret preparations, in imitation of well-known domestic medicines, legitimate products; and is it honest for a dealer to allow his name to be printed on the label so as to give an unknown compound currency, when he is ignorant of the contents of such preparation? Why does he not prepare his own family and household remedies?

9. Does not the pharmacist jeopardise his reputation and standing by dealing in non-secrets, when he possesses the knowledge of compounding as good or better formulæ?

10. Does it pay pharmacists, morally and financially, to substitute?

11. Is the claim true that physicians dispense their own medicines on the ground that pharmacists use inferior materials in their preparations?

12. Where reputable pharmacists discover goods falsely labelled and below pharmaceutical standards, is it not their duty to expose such dishonesty?

13. Has excessive competition introduced a "cheap era" into the drug trade, and where will such tendency place pharmacy in the future, in its relations to the physician and the public?

14. Why are physicians' supply establishments making inroads on the business of the pharmacists? Do physicians as a whole, especially in large cities, encourage this new departure, and what is the remedy?

15. What are the chief arguments employed to induce physicians to supply ready-made medicines to their patients; cite them and state some facts connected with this query?

16. Where is the practice of medicine drifting? Explain the reason why.

17. If the future facilitates the art of dispensing by physicians what is our remedy?

18. Is it not our duty to demand protection from physicians and make an effort to fuse our natural relationship by just compromise—what should a compromise be based on?

19. What arguments have we against those who advocate that the day has arrived when any person, with open store for sale of merchandise, will have a right to sell his goods to any other person who comes with money in hand, and demands same, irrespective of his calling or profession? In other words, why should pharmacy be protected?

20. Give reasons why it seems impossible for us to organise ourselves into solid columns, when we positively know that it will be to our advantage professionally, commercially, and financially.

21. What influence has compelled the retailer to enter into direct business relations with manufacturers of pharmaceutical products? How can the jobber regain such loss?

22. What will be the future of formed and forming co-operative societies among pharmacists and druggists, and what will it finally lead to?

PARLIAMENTARY NOTES AND NEWS.

Fiat Justitia.—Cynically inclined persons are apt to sneer at British sympathy with the "untutored savage," and to point out that it usually ends badly for the savage. There is no suspicion, however, that Dr. Farquharson's sympathy with the native surgeons on the Gold Coast has any other motive than that of removing an injustice. The native surgeon is neither a savage nor untutored, but is a competent medical man who is officially employed by the Government, and performs his duties as efficiently as the English surgeons in the same service. It appears, however, that whilst the Englishmen get leave every year, free passage to Europe, and full pay during absence, their African colleagues have to wait several years before they can obtain a temporary release from their duties, have to pay their own passage, and only receive half pay for half the period of their leave. It is this racial inequality that Dr. Farquharson thinks stands in need of some explanation, and he is seeking it from the First Lord of the Treasury.

The Metric System.—In pursuance of his promise, the President of the Board of Trade, on July 30, brought in a Bill to legalise the use of weights and measures of the metric system. The Bill is purely permissive, and consists only of three principal clauses, and a schedule Clause I. legalises contracts, bargains, sales and dealings made or had according to weights and measures of the metric system, and permits the possession of such weights and measures. Clause 2 provides for the verification of copies of metric standards in the same manner as copies of other Board of Trade standards, and Clause 3 defines the expression "local standards" in Section 40 of the Weights and Measures Act, 1878, as including local metric standards. The schedule to the Bill gives a series of equivalents of metric and Imperial weights and measures. Similar equivalents are given in the Society's Calendar (*vide* p. 263, 1896 edition), but certain alterations may be noted. For instance, the metre is now given as representing 39·37012 Imperial inches, instead of 39·37079 inches. The litre consequently becomes 1·75985 pints, in place of 1·76077 pints.

The Introduction of the Bill was marked by strange proceedings, for which it is somewhat difficult to account. Mr. Gibson Bowles (the Cap'en Tommy of 'Punch's Essence of Parliament') expressed his determination to fight to the last in defence of the English yard and the English quart, and created quite unparliamentary laughter by asserting that our classic literature would be rendered unreadable if the Bill were carried, because our writers wrote with reference to existing weights and measures. Truly the member for King's Lynn has a subtle sense of humour. The Bill was read the first time amid "groaning, cheers, and much laughter." It will, as before intimated in these columns, not be proceeded with this session.

The Select Committee on Petroleum has found itself unable to complete its investigation in time for legislation during the present session, and has therefore reported the evidence already taken, with the recommendation that a committee on the same subject be appointed early next session. The committee has examined a large number of witnesses, and several well-known names are included in the list. To mention Sir V. D. Majendie, Sir Courtenay Boyle, Mr. Boverton Redwood, Professors Ramsay, Dewar, Attfield, and Mendeleef, Lord Kelvin, Sir H. Roscoe, and Sir F. Abel, is to announce that the committee has had the benefit of some of the ablest advice obtainable on the subject.

The Vaccination Commission.—In reply to Mr. J. G. Talbot (Oxford University), who asked whether there was any nearer prospect of a report from the Vaccination Commission, Mr. Balfour intimated that the report is being prepared with all possible speed. The session opened with a similar question and answer, and it will apparently close without seeing the present uncertainty on the subject of vaccination removed from the minds of the local Health Authorities.

The London University Commission Bill was, on the 31st ultimo, read a third time in the House of Lords and passed. It has now gone to the Commons, where it is down for second reading.

Mr. H. Samuel (Limehouse), has drawn attention to the report of the *Lancet* Commissioners on antitoxins, published in the *Lancet* for July 18, and desires to know whether the British Government is prepared to follow the example of the German authorities and take steps to ensure that the strength of the antitoxic serums employed in this country shall be maintained at a uniform standard. It seems that the Germans have a State laboratory, directed by Professor Ehrlich, which is specially charged with the duty of standardising all serums employed in the Empire.

PHARMACEUTICAL SOCIETY.

"FIRST" EXAMINATION RESULTS.

A meeting of the Board of Examiners for England and Wales was held on Tuesday, August 4.

Certificates by approved examining bodies were received from the undermentioned in lieu of the Society's examination:—

Archer, Henry, Guiseley. | Davison, Miller, Durham.
Scanlan, Charles Edward, Urmston.

The report of the College of Preceptors on the examination held on July 14 was received; 412 candidates had presented themselves for examination, of whom 233 had failed.

The following 179 passed, and the Registrar was authorised to place their names upon the Register of Apprentices and Students:—

Allen, John Rex, Bloxwich.
Anderson, George Fraser, Edinburgh.
Anderson, Hugh Robertson, Crieff.
Asher, Walter Paterson, Elgin.
Banham, Albert Edward, Cambridge.
Barton, Theodore Bogues, Alverstoke.
Belsher, Henry Ernest, Kingswood.
Berkovitch, Alfred, Cambridge.
Berry, John Cuthbertson, Paisley.
Bickford, John, Exmouth.
Birkett, Harry, Burnley.
Black, Thomas Kennedy, Aberfeldy.
Blore, Eli John, Rugeley.
Bound, William S., Llandrindod Wells.
Bowe, John Lodge, Brierley Hill.
Bower, Arthur, Macclesfield.
Brough, John, Perth.
Bruce, David Malcolm, Arbroath.
Buchanan, George, Kirriemuir.
Cadoux, Samuel Hubert, Leicester.
Casswell, Henry, Gosberton.
Chadwick, George Ernest, Macclesfield.
Chapman, James G., Manchester.
Clark, Alexander Brown, Dundee.
Cooke, Robert Burt, Newhaven.
Cope, Frank Youl, Ely.
Cope, Gilbert, Leek.
Davie, George Myles, Dundee.
Dawson, George Henry, Southend.
Deeping, Frederick Talbot, Leicester.
Dickson, James John, Gorebridge.
Dier, George Hugh Fielden, Mayfield.
Dixon, Charles Harold, Nottingham.
Dobson, Ernest John, Cambridge.
Dodgson, William Vondy, Ramsey.
Draper, Thomas, Uppingham.
Duff, James, Dumfries.
Dunlop, David A. T., Dornock.
Dyson, John Arthur, Halifax.
Evans, William, Carnarvon.
Fairfoot, Robert, Leeds.
Fairful, Robert, Stirling.
Fellows, Benjamin J., Birmingham.
Ferriday, Herbert John, Shrewsbury.
Ferry, Alfred, Gateshead-on-Tyne.
Fielding, Tom West, Rochdale.
Forbes, Alexander, Nairn.
Foster, James, Oldham.
Freer, Arthur Harry, Uppingham.
Fulcher, Henry Moutell, Towcester.
Geddes, James Largue, Edinburgh.
Gibson, W. J., Newcastle-on-Tyne.
Good, Harold, London.
Graham, Frederick Forster, Pittington.
Grant, George Sorrie, Nethy Bridge.
Gregory, Sidney Charles A., Plymouth
Griffin, Reginald Ring, Slough.
Hall, George William, Aberdeen.
Hallgarth, Raymond, Thorne.
Hardern, Ernest, Barrow-in-Furness.
Harrington, A. H. A., Walsham le Willows.
Harvey, James D., Stromness.
Hay, James Archie J., Edinburgh.
Highley, Herbert, Rochdale.
Hill, Wilson, Blackpool.
Hocking, James Arthur, Truro.
Hodder, Robert Barry, Reading.
Holding, Walter Ernest, Bignall End.
Holliday, William Elliott, Preston.
Humphreys, Julian, London.
Ingram, Frederick James, Wakefield.
Innes, Rome, Port Gordon.
Jenkins, John Daniel, Aberystwith.
Jobling, Vivian, Whickham.
Johns, Thomas Edgar, Tonypandy.
Jones, Albert Thornton, Cardiff.
Jones, Frank Stuart, Birmingham.
Jones, Hugh, Talysarn.
Jones, John Arch, Ystradmeurig.
Jones, Joseph John, St. Clears.
Jones, Richard Henry, Penkridge.
Jones, William John, Bodedern.
Joseph, Frank Henry, Stratford.
Kelly, Albert Edward, Edinburgh.
Lane, Sidney William, Liverpool.
Leach, Robert Henry, Carlisle.
Leadbetter, David Alex., Kirkcaldy.
Lindsay, Andrew, Helensburgh.
Longstaff, Henry, Darlington.
McDougall, Robert, Comrie.
McGregor, Gordon, Govan.
McHarg, Alexander, Liverpool.
Maciver, Alexander, Aberdeen.
McNeill, John, Greenock.
McRae, Alexander, Edinburgh.
McTurk, John, Glasgow.
Marshall, Frederick W., Gateshead.
Milburn, Christopher Howard, Leeds.
Millar, Andrew Blair, Broughty Ferry.
Mills, Charles, Cirencester.
Mitchell, Frank S., Atherton.
Mitchell, James B., Gilmerton.
Morgan, Howard H., Rhayader.
Morling William N., Worthing.
Mortimer, Henry, Batley.
Murray, James, Dumfries.
Murrell, William F., Hartlepool.
Napier, Duncan S., jun., Edinburgh.
Nash, Alfred Wilkinson, Deal.
Nicol, Mary Craigie, London.
Northey, John Henry, Alford.
Osborne, Harold Edwin C., Plymouth.
Page, Walter James, Portsea.
Palfrey, Thomas Alexander, Selkirk.
Partridge, Sydney John, Reading.
Paterson, Frank Robert, Langholm.
Patten, Mary, Alnwick.
Payne, Edgar Lewis, Tideswell.
Pearson, William James, Ulverston.
Phillips, Henry Marcus, Tenby.
Poole, William James, Northwich.
Potts, Joseph Percival, Oldham.
Rankine, Andrew Landale, Cardenden.
Ravenshaw, John, Wellington.
Reed, Frederick Herbert, Wrafton.
Reedman, Herbert James, Stamford.
Reeks, Herbert, Spalding.
Rees, Llewelyn Magor, Maesteg.
Reid, David, So. Shields.
Remers, Martin, Manchester.
Richards, Edwin Eaton, Sheffield.
Rimmington, Felix, Manningham.
Ritchie, David French, Southsea.
Roberts, W. H., Ashton-in-Makerfield.
Rodger, David, Leith.
Rothwell, Herbert, Stockport.
Russell, Arnold Hugh, York Town.
Scattergood, William J., Nottingham.
Scott, William R., Liberton.
Scully, David, Glasgow.
Scurlock, John, Cardiff.
Shaw, John Tindal, Montrose.
Shaw, Sam Thorpe, Ossett.
Shimwell, Thomas William, Buxton.
Simpson, Allwood, jun., Stalybridge.
Slater, William Northwood, Wells.
Smith, M. W., Newcastle-on-Tyne.
Stephenson, Thomas Ebenezer, Hull.
Stockdale, Harry, Shipley.
Storm, James, Nairn.
Stott, James Robert, Kelso.
Suffolk, Ernest, Lenton.
Sykes, Archibald, Harrogate.
Thick, William Robert, Redditch.
Thomas, Thomas, Abergwilly.
Thomas, Thomas J., Cellan.
Thomas, William, Panteg.
Thomson, Graham Daniel, Edinburgh.
Thonger, Cyril T., Birmingham.
Tomlin, Ellis, Leeds.
Tredaway, George H., Manchester.
Tymms, Percy, Birmingham.
Venn, John Archibald, Devonport.
Walker, Cumming Bremner, Forgue.
Wallis, Hugh William, Cambridge.
Warner, Stafford Allen, Langport.
Watson, Arthur, Nottingham.
Watt, David, Lochee.
Welch, Henry Ernest, Belper.
Weston, M. F., Newcastle-on-Tyne.
White, Henry Percy, Bournemouth.
Wilkins, Gordon Howard, Brompton.
Willey, Francis Joseph, Hoyland.
Williams, John Harold, Sheffield.
Williams, John Ralph, Falmouth.
Williamson, Adam, Innerleithen.
Wilson, George Bell, Kirriemuir.
Wright, William, Leigh.
Wylie, Robert Thomas, Towcester.

The questions set at this examination were published in the *Pharmaceutical Journal* for July 18, p. 54.

The following is a list of the centres at which the examination was held, showing the number of candidates at each centre, and the result.

	Candidates.				Candidates.		
	Examined.	Passed.	Failed.		Examined.	Passed.	Failed.
Aberdeen	18	5	13	Jersey	2	0	2
Birmingham	24	9	15	Kirkwall	3	1	2
Brighton	6	2	4	Lancaster	7	3	4
Bristol	7	3	4	Leeds	18	10	8
Cambridge	9	5	4	Lincoln	4	2	2
Canterbury	2	1	1	Liverpool	17	5	12
Cardiff	9	3	6	London	30	10	20
Carlisle	7	5	2	Manchester	45	19	26
Carmarthen	14	8	6	Newcastle-on-T.	20	9	11
Carnarvon	5	2	3	Northampton	4	2	2
Cheltenham	2	1	1	Norwich	3	1	2
Darlington	5	2	3	Nottingham	11	7	4
Douglas	1	1	0	Oxford	3	1	2
Dundee	17	11	6	Penzance	2	2	0
Edinburgh	38	16	22	Peterborough	4	4	0
Exeter	5	2	3	Plymouth	5	3	2
Glasgow	28	7	21	Sheffield	5	3	2
Guernsey	1	0	1	Shrewsbury	8	4	4
Hull	10	2	8	Southampton	7	4	3
Inverness	5	4	1	York	1	0	1

PHARMACEUTICAL JOURNAL.

A Weekly Record of Pharmacy and Allied Sciences.

ESTABLISHED 1841.

Circulating in the United Kingdom, France, Germany, Austria, Italy, Russia, Switzerland, Canada, the United States, South America, India, Australasia, South Africa, etc.

Editorial Office: 17, BLOOMSBURY SQUARE, W.C.
Publishing and Advertising Office: 5, SERLE STREET, W.C.

LONDON: SATURDAY, AUGUST 8, 1896.

THE COUNCIL MEETING.

The meeting last Wednesday was one of more importance than usually attaches to the August Council Meeting, which practically winds up the work of the session. In the first place the report presented by Mr. Carteighe on behalf of the official delegates from the Pharmaceutical Society to the Conference at Liverpool, may be taken as indicating, from an official point of view, a much more thorough sympathy with the Conference, as an independent organisation, than has ever before been manifested since the time when these annual pharmaceutical reunions were inaugurated by the efforts of Reynolds, Groves, Schacht, and others. While giving ample expression to the feeling of gratification experienced by the Society's official delegates, as well as by all other visitors to the Conference meeting, in regard to the hearty reception accorded to them and the excellence of the arrangements made and carried out by the local executive, the general tone of Mr. Carteighe's remarks afforded ground for believing that some considerable approximation is being made towards the realisation of a project put forward some years ago for more intimate association of the Society and the Conference in the work of promoting union and co-operation among registered chemists. That the Conference has contributed largely to bring about those desirable objects is undeniable, and they might be still further promoted to general advantage by a union of forces in the future, which would give effect to the original idea on which the Conference was established.

Another very important part of the business transacted was the adoption of recommendations relating to the reorganisation of the Society's School, the object of which was fully explained by the President (see page 133). The alterations which are to be made may be expected to have the effect of largely increasing the practical efficiency and usefulness of the School as a means of educating pharmacists to meet existing requirements. The coming session will undoubtedly be the opening of a new epoch in the work of the Society, and the conservation of pharmaceutical interests is so essentially involved in the attainment of the object aimed at by the Council as to claim the most earnest support from all directions.

The routine business of the meeting was of the usual nature. The additions to the roll of the Society were considerable, comprising fifteen members, fifty-one associates, and seven students. The report of the Finance Committee presented no special features, and was adopted unanimously.

On the recommendation of the Benevolent Fund Committee, three grants amounting to thirty-two pounds were ordered to be paid, and the Vice-President remarked that the cases to which they referred must be regarded as likely to make permanent claims on the funds. Mr. Hampson again called attention to some reforms in connection with the Benevolent Fund, especially in regard to the desirability of canvassing by candidates for annuities, urging the views held by him on this subject by illustrations, showing that the system operated disadvantageously in some instances. He also suggested in the interests of economy that the printing of monthly financial statements might be discontinued, and after the report of the Committee had been adopted, a resolution was passed adopting Mr. Hampson's suggestion.

The report of the Library, Museum, School, and House Committee was of the usual character, and was adopted.

On the recommendation of the Research Committee, Mr. Wilfrid Lean was elected Redwood Scholar for the session 1896-7, and the President stated that a full report would be presented by the Committee at the October meeting of Council. On the recommendation of the examiners appointed to conduct the examinations, the Jacob Bell Memorial Scholarships were awarded to Mr. Harold Evan Matthews and Mr. Frederick Alfred Upsher Smith. The Manchester Pharmaceutical Association Scholarship was awarded to Mr. Thomas Oldham Barlow. On the recommendation of Professor Green, the Herbarium silver medal was awarded to Frank Giles, and certificates of honour to William Palmer and Joseph Milne.

The President expressed satisfaction that there had been a fair number of candidates for the Jacob Bell Scholarships at sixteen centres, and that besides the two successful candidates there were several others who obtained sufficient marks to take the scholarship.

Mr. Allen also referred to the competition for the Bell Scholarships, speaking of the great advantage gained even by unsuccessful candidates as a reason why no opportunity should be missed of impressing that fact upon apprentices or pupils. The success of the candidate for the Manchester Scholarship was also spoken of with gratification by the President and other members of the Council.

In the award of sessional prizes the silver medal in practical chemistry was taken by George Senter, that in chemistry by Harold Wilson, those in botany and materia medica, by John Arthur Dewhirst, and that in pharmacy by Edward Charles Spurge. The Pereira Medal was awarded to George Senter, the Society's silver medal to G. C. Spurge, and the Bronze Medal to Francis Frederick A. Tunbridge.

Mr. Symes expressed a hope that a certificate of honour might be given as well as a silver medal in pharmacy, since that subject has become more important from the decline of the apprenticeship system. Mr. Carteighe explained that the object aimed at by Mr. Symes had been provided for in another recommendation.

The report of the General Purposes Committee on the re-organisation of the Society's School, set forth eight recommendations, the general effect of which was that the Council should take the control of the School, that the staff should consist of three professors, and that a member of the Library Committee acting as visitor should report periodically to the Council. The elementary course of

instruction is to extend from October to June, and the advanced course from October to March.

In moving the adoption of these recommendations, the President first drew attention to the fact that the duty of promoting pharmaceutical education imposed by the Society's charter has always been fully recognised, a large part of the Society's income during the past fifty-four years having been spent upon that work. He described the proposed reorganisation of the School as having been devised to meet the want of a compulsory curriculum which is felt by many to be desirable. The reversion to a former condition of the School, when it was under control by the Council, was justified as being in accord with the prevailing tendency of opinion in regard to uniting the functions of teaching and examination, besides offering a prospect that the Society's School may eventually claim recognition as a part of a teaching university of London.

THE SCHOOL OF PHARMACY.

The School of Pharmacy has always been a prominent feature in the work of the Pharmaceutical Society. So impressed were the founders with the importance of systematic education, that in the very year following that of the formation of the Society arrangements were made for the delivery by eminent men of lectures on chemistry, botany, materia medica, and pharmacy. The curriculum was subsequently made more complete by the institution of practical laboratory instruction. All who are connected with the Society, or who are interested in the advancement of education, may regard the results of the fifty-four years' work in this department with considerable satisfaction. Many of the men who in recent years have been most zealous and successful in the field of pharmaceutical investigation have received their technical training in Bloomsbury Square, and the value of the educational work of the Society's School has been sympathetically recognised by all who are interested in the advancement of scientific knowledge. It must never be forgotten that previous to the passing of the Pharmacy Act in 1868, examinations were purely voluntary, and were undergone by those only who felt the immense value of education.

Since 1868, however, examination has become an obligatory matter, and is, unfortunately, considered by many as the sole object for which to work. This state of things is not peculiar to the calling of pharmacy, but is observable wherever examinations are the gateway to statutory qualification. Candidates of this class are specially prepared for examinations, and examiners find considerable difficulty, with the short time at their disposal, in accurately gauging the amount of knowledge possessed by the examinees. Moreover, the standard demanded of the candidates has, with the advance of general education, been gradually raised. In 1873 the Council, whilst handing over to the professors much of the responsibility connected with the School, also agreed to arrangements whereby students might receive instruction for both Minor and Major examinations in the course of a single session. It will now be learnt with satisfaction by all friends of sound education that in the arrangements approved this week by the Council, the courses for these two examinations will be considerably extended. The prospectus for the fifty-fifth session of the School of Pharmacy will be published and distributed in the course of the next few days, and all those who are nterested in educational work cannot do better than carefully study its pages, as well as the remarks made by the President and other members of the Council at the meeting on Wednesday last.

A few days ago Lord Rosebery, speaking at Epsom of the unfortunate decrease in recent years of exported British produce, said, "The gradual decay of the apprenticeship system would necessitate, in all our smaller towns, some means whereby a man might be able to become a skilled artisan in his trade, and so obtain that capital which skill represents to the man who possesses it." In the calling of pharmacy apprenticeship has for many reasons become of less value than formerly, therefore it has become all the more necessary that technical instruction should be given in the Society's School, and so supply a portion of the training which apprenticeship at one time afforded. This technical instruction, together with the accurate and thorough knowledge of the sciences on which his art is founded, supply the best capital for the pharmacist of to-day, and both should be obtainable by students in the Society's School who diligently and intelligently follow the courses of instruction which will be given. Satisfaction will doubtless be felt that the Council now proposes again to take the full control of all departments of the School, and this control will be made all the more thorough by the arrangement that a member of the Council will be authorised to attend all the meetings of the staff, and report periodically to the School Committee. Readers of the prospectus will also learn that new appointments in the teaching staff have been made, and that the fees have been altered. Other modifications will doubtless become necessary with further experience, but the Council now offers a scheme which it is believed will be appreciated, and it may fairly be regarded as in accordance with the best traditions of the past, and with the enlightened views of the present.

RETIREMENT OF MR. INCE.

Although the work done by Mr. Joseph Ince in connection with the Pharmaceutical Society is well known to many of the older members — and his more recent labours as a member of the teaching staff will be familiar to students—it may, perhaps, not be so generally known how intimately he has been identified with the work of the Society from a very early period in its history. In any case, his retirement from the position of teacher of practical pharmacy offers an appropriate opportunity for calling attention to the fact that in various capacities, official and unofficial, Mr. Ince has been an active participator in the efforts made to advance the art of pharmacy, and improve the position of those engaged in that occupation. When the *Pharmaceutical Journal* was conducted independently by Jacob Bell during the earlier period of its existence, Mr. Ince was one of the most active coworkers with the Editor. At a later period when the Journal was edited by Redwood, Bentley, and Barnard, the assistance rendered by Mr. Ince was found equally useful, and since the commencement of the third series many contributions from him have appeared in these pages, which have been highly appreciated by readers as well as by the Editor. In addition to literary work in the interest of pharmacy, Mr. Ince has also served as a member of Council, as an examiner, and for the last fourteen years he has conducted the class of practical pharmacy, which has become a necessity under existing conditions.

ANNOTATIONS.

STUDENTS' APPARATUS AT THE SCHOOL OF PHARMACY.—It is perhaps natural that at the conclusion of a college course and the successful passing of his examination, the average student of pharmacy should relax that perfect control which he normally maintains over his feelings, and in various curious ways manifest his temporary state of professional abnormality. That he should depart, however, and even after the course of years forget that he had invested a not insignificant sum in the purchase of chemical apparatus, is surprising, to say the least, as one would expect that he would find the need of the apparatus almost directly he re-entered upon the practice of pharmacy. Nevertheless it seems that several past students at the Society's School of Pharmacy occupy this peculiar position, and we are asked to state that speedy steps must be taken to recover all personal possessions left in lockers or boxes at No. 17, on pain of forfeiture. The School laboratory is to be entirely rearranged during the recess, and space is too limited for any corners to be spared for the accumulation of relics of the past. Sentiment is a desirable thing in its proper place, but much as former students at No. 17 may wish to feel that some small space in the old laboratory is yet occupied by their belongings, stern practicality requires the removal of all encumbrances in order that the premises may be thoroughly adapted to the most modern requirements.

"CHEMISTS AND COUNTER PRESCRIBING" was the subject of a paper contributed at the Carlisle meeting of the British Medical Association, by Dr. George A. Bateman, of London, who said that if the members of the medical profession all over the world were polled, they would unanimously condemn the practice of medicine by chemists and druggists. So would a majority of the latter probably, and they would also agree with Dr. Bateman's sage remark that the examinations for a registered chemist were never intended to be examinations in either medicine, surgery, anatomy, or pathology. He also quoted cases of incorrect diagnosis, and of mistakes made, and asserted that counter prescribing is becoming very general, suggesting that a series of successful prosecutions under the Apothecaries Act would do good by bringing this matter to a practical issue. He pointed out, however, that medical men must expect pharmacists to retaliate by proceedings against members of the profession who keep dispensers to sell opium or any scheduled poisons. Probably as a safeguard, therefore, it was suggested that before enforcing their legal rights (*sic*), the members of the Association should approach the Council of the Pharmaceutical Society, and ask it to use its "moral" power in restraining its licentiates from breaking the law and infringing the rights and privileges of the medical profession. Well and diplomatically put, Dr. Bateman.

NEW MEMBERS OF THE B.P. CONFERENCE.—It was hoped that there would be a large increment of members at the Liverpool meeting last week, but at the moment of reading the annual report the additions numbered sixty-nine only. This figure should have appeared in the report as printed last week (see page 88), the number there given having ceased to be accurate before the Executive Committee finally met to pass the report. With regard to this paucity of candidates for election to membership, there is an apt quotation in the July *Spatula*, just to hand—"The pharmacist who takes no interest in pharmaceutical journals or association meetings, has not the proper comprehension of his business. It is very noticeable that the most successful druggists give a good deal of attention to both."

MR. MARTINDALE'S LIVERPOOL ADDRESS received the distinction of a half-column editorial notice in the *Standard*, and ever since correspondents have been writing to that newspaper with reference to the alleged neglect of the study of drugs by medical practitioners. Some appear to know nothing of the subject on which they write, others think they know something, and none seem to have contributed any suggestion of value to the discussion. Laymen are alarmed by the presidential utterances, and medical men either support the main contention or flatly deny it; but, after all, nothing so very dreadful was said by Mr. Martindale, who is anxious only that those who practise the healing art should possess a better general acquaintance than is usual with the tools of their craft. Pharmacists, above all other people, know the extent of the average medical practitioner's knowledge of the properties and action of drugs, and a large majority of them could probably confirm Mr. Martindale's statements from their own experience.

THE HOMŒOPATHIC CONGRESS.—The fifth quinquennial meeting of the International Homœopathic Congress was opened on Tuesday last, at Queen's Hall, Langham Place. Dr. Pope presided, and, in his opening address, dealt with the influence of the therapeutic teaching of Hahnemann in 1796 on the study and practice of medicine in 1896. He said the year 1796 was one in which an indelible impression was made upon medicine both in its preventive and curative aspects, owing to the publication by Hahnemann of the first essay containing the views which developed into what is now known as homœopathy. In his teaching he insisted upon the necessity for a reform in therapeutics; the displacement of venesection from the category of remedial agents to the subordinate position of a palliative, to be used only in the absence of any knowledge of rapidly-acting specifics; the nature and need of medicines which should act specifically; the study of drugs by experimental enquiries into their powers of modifying the health of the body, their clinical application by the guidance of the principle of *similia similibus curantur*, and their administration singly and in small doses.

The CONFERENCE PHOTOGRAPH, taken in the quadrangle of the Royal Infirmary, by Messrs. Mowll and Morrison, of Hardman Street, Liverpool, is a remarkably fine addition to the series of which it forms part. The figures are well-arranged, the portraits good, and the building serves as an excellent background. The photograph was taken on the opening day, at 1 p.m., and so expeditiously were the various technical operations carried out that a proof was ready for inspection by 6 p.m., whilst finished and mounted prints were obtainable the following morning. Readers who care to possess copies should send 3*s.* each, at which price mounted prints will be supplied.

SIR WILLIAM GROVE, who died at the beginning of this week, was a distinguished lawyer who would perhaps have done more for the world had circumstances permitted him to devote his attention exclusively to science. He was Professor of Experimental Philosophy at the London Institution from 1840 to 1847, actively participated as member of Council in the work of the Royal Society, and was President of the British Association when it met at Nottingham in 1866, the subject of his address being the continuity of natural phenomena as evinced by recent progress in science. His most important work was that which was crowned by the publication of his famous essay on "The Correlation of Physical Forces," but he also made notable discoveries in electricity and optics, invented the well-known battery bearing his name, and published many other valuable contributions to scientific literature.

PHARMACEUTICAL SOCIETY

MEETING OF THE COUNCIL.

WEDNESDAY, AUGUST 5, 1896.

Present:

Mr. Walter Hills, President.

Mr. John Harrison, Vice-President.

Messrs. Allen, Atkins, Bateson, Bottle, Carteighe, Corder, Hampson, Park, Savory, and Symes.

The minutes of the last meeting were read and confirmed.

The Conference in Liverpool.

Mr. Carteighe then asked leave to express on behalf of the delegates who attended the Conference their cordial and hearty appreciation of the hospitality, consideration, and kindness shown them by their Liverpool friends. The difficulties inherent to organising any meeting of the Conference were even greater in a large city like Liverpool than in smaller places. Having had some experience in these matters he could speak feelingly of the zeal and spirit with which the Committee and Local Secretary had to work in a large city in order to make such a gathering a success. On this occasion the social element was equally prominent with the scientific; practically every moment of the day was occupied either in the form of instruction or entertainment. The reports which had appeared in the journals hardly conveyed adequately what he wished to express, viz., that notwithstanding the fact that there was another Conference going on in Liverpool the same week, which increased the difficulties of the Local Committee in making arrangements, the comfort and happiness of the visitors was sedulously attended to from the moment of arrival until they left. He wished personally to thank the Chairman of the Local Committee, Dr. Symes, now President of the Conference; Mr. Wardleworth, the indefatigable local secretary, who, while never putting himself forward, did the work most thoroughly and efficiently; Mr. Evans, of Liverpool, and many others who made themselves extremely useful in many ways. He also wished to say that the thanks of the delegates were especially due to the hon. secs. of the Conference, Mr. Naylor and Mr. Ransom. In the somewhat hurried way in which the final meeting broke up he was sorry to find that the usual recognition of those gentlemen's services was not made, and as an old secretary of the Conference, he felt it his duty to say that he for one thoroughly appreciated their active efforts in directing the scientific side of the meetings, and the self-denying zeal with which from year to year they carried on the work. He congratulated Dr. Symes and other Liverpool friends on the admirable manner in which the excursion on the Thursday was carried out from beginning to end, notwithstanding the additional difficulty thrown on the Committee by many visitors not signifying their intention to be present until the last moment. He had attended many Conference meetings, but the last was by no means the least pleasurable.

Mr. Atkins said he should be glad to add one word to Mr. Carteighe's remarks, especially in carrying it a step further, as to a function in which their late President was not with them. He referred to the visit to Hawarden, as to which he might personally be forgiven the exercise of somewhat of the feeling of a hero-worshipper, and beyond that he wished to express his regret that in the somewhat hurried break-up some reference was not made to the hon. secretaries. As to the general arrangements at the Conference, he felt it was impossible adequately to express the obligations they were under to the Executive and others for so excellent a programme as they provided, or for their personal exertions to make the meeting a success and secure the happiness of those who shared alike in the social and the more scientific sides of the gathering. He was glad of this opportunity of conveying to Dr. Symes and others an acknowledgment of the unalloyed pleasure derived from the Conference proceedings.

Dr. Symes, in response to these expressions, said he was much gratified at this recognition of the members of the Council, coming after so many other thanks which had reached the Liverpool Executive. In view of the fact that the social side of the Conference was only one and that a minor aim, he was glad to hear that morning's testimony on the more scientific side of the meeting to the work of the local secretaries who exerted themselves with an evident love for duties to which they showed marked devotion. The members of the Local Committee showed themselves not less anxious for the success of the Conference, though as a matter of convenience and arrangement a large proportion of the work fell on the shoulders of a few, and he was very pleased to hear the testimony borne that morning to the exertions of Mr. Wardleworth, Mr. Evans, and others. He should be glad to convey to his colleagues the kindly recognition which had been made of their efforts, and he thought he could say for them, as he did for himself, that if they had succeeded in giving pleasure to others it would be their highest reward.

The President said he should like to add his satisfaction at finding that the Conference had been referred to at that Council, and to add his congratulations at hearing of the unqualified success of the meeting. He hoped that his absence from the Conference would not be regarded as indicating any disrespect on his part or want of full sympathy with the members, but it arose from his having other pressing engagements in London.

Mr. Hampson desired to express his deep regret that he was unable to be present at the Conference. Up to the last moment he had looked forward to being there, and he was very sorry not to be able to manage it.

The Vice-President said he should not like it to be thought that he felt no regret at not being able to attend the Conference. As a Lancashire man he had looked forward to meeting his Lancashire and Yorkshire friends in Liverpool, but circumstances over which he had no control prevented it. He had read with deep interest what took place, and had been pleased to hear still further from Mr. Carteighe how thoroughly enjoyable the meeting had been, and not only so, but that from a scientific point of view the Conference had been a marked success.

Restoration to the Register.

The name of the following person, who has made the required declaration, and paid a fine of one guinea, was restored to the Register of Chemists and Druggists:—

John Draper Florance, 84, Queen's Road, Twickenham.

Diplomas.

The undermentioned, being duly registered as Pharmaceutical Chemists, were granted diplomas stamped with the Society:—

Bateson, Alfred Campbell.
Bowen, Edgar Cecil.
Brice, Henry Doyle.
Currie, Archibald.
Davis, Sidney.
De Morgan, Fredk. Filmer.
Hill, Chas. Alexander.
James, Henry Palmer.
Latham, Hugh.
Lean, Wilfrid.
Nicholson, John Gordon.
Payne, Roger.
Rymer, Fredk. Victor.
Senter, George.
Smith, Albert Geo.
Smith, Maurice.
Spurge, Edwd. Chas.
Stamp, Fras. Underwood.
Stones, Arthur John.
Sturch, Harry Howes.
Taylor, Archd. Leonard.
Tunbridge, Fras. Fredk. Arnull.
Veitch, Wm. Cuthbert.
Wild, George Herbert.
Williams, George.
Williams, John
Wilson, Harold.

Election of Members.

Pharmaceutical Chemists.

The following, having passed the Major examination, and tendered their subscriptions for the current year, were elected "Members" of the Society:—

Bateson, Alfred Campbell, Kendal.
Davis, Sidney, South Kensington.
De Morgan, F. F., Newport, Mon.
Grier, James, Penicuik.
Hill, Chas. Alexander, London.
Lean, Wilfrid, Leeds.
Payne, Roger, Chatham.
Smith, Albert George, Liverpool.
Smith, Maurice, Kidderminster.
Spurge, Edward Chas., Witham.
Stamp, Francis U., Hampstead.
Stones, Arthur John, Rotherham.
Sturch, Harry Howes, Haslar.
Williams, George, Redruth.
Williams, John, Corwen.

Election of Associates in Business.

The following having passed the Minor examination, being in business on their own account, and having tendered their subscriptions for the current year, were elected "Associates in Business" of the Society:—

Aves, Ernest Harold, East Kirkby.
Glyn-Jones, William Samuel, Poplar.
Robertson, James, Fortrose.
Smith, John, West Norwood.

Election of Associates.

The following, having passed the Minor examination and tendered or paid as "Students" their subscriptions for the current year, were elected "Associates" of the Society:—

Bisset, Arthur William, Stonehaven.
Blakeley, William, Bramley.
Brown, Charles, Northallerton.
Butler, Richard, Drighlington.
Chambers, Frank Dawson, Eastwood.
Clarke, Wm. John, London.
Collin, John Francis, Diss.
Crampton, Walter, Southport.
Crawford, Geo., Arbroath.
Daniels, Herbert Joseph, Leicester.
Davison, John Lyle, Bidford.
Desmond, Dennis Wm. A., London.
Dewhirst, John Arthur, Halifax.
Dickenson, Joseph F., Hyson Green.
Firth, Fred, Wakefield.
Fletcher, Herbert Parker, Scunthorpe.
Forrester, Alex. Harrow, Dysart.
Frith, John Benjamin, Coggeshall.
Gill, Frank, Keighley.
Greaves, Alfred Ellis, Boscombe.
Green, Hugh, Darlington.
Greenville, Ernest G., Birmingham.
Hadley, Mary Winifred, Birmingham.
Harrison, Thomas Arthur, Bourne.
Holdsworth, Fredk. H., Huddersfield.
Hooper, Richard John, Wood Green.
Hornby, Frederick William, Luton.
Hunt, Harold Edward, Poole.
Hutchings, Thomas, Launceston.
Knight, Richard, Launceston.
De Lisle, Francis Rouget, Cambridge.
Long, Herbert Samuel A., Lowestoft.
McLaren, Jas. B., Bridge of Allan.
Mallaband, William Henry, Sheffield.
Ordish, Francis P., Leighton Buzzard.
Packer, Frederick Ernest, Norwich.
Page, Henry S., East Dereham.
Peck, Harold Robinson, Cambridge.
Picken, Charles R., Newport, Salop.
Plumstead, Fredc. G. E., Wymondham.
Rainey, Robert Martin, Leeds.
Raybould, George, London.
Robinson, Richard Charles, Kendal.
Ruff, William, Whitby.
Salthouse, Edward, Blackpool.
Sargeant, Fredk. Pilkington, Chorley.
Shaw, Henry Woolhouse, London.
Silver, Sydney Ward, Long Melford.
Strong, Alfred E., Newcastle-on-Tyne.
Temple, Fredk. Wm., Driffield.
Thomas, James Douglas, Sydenham.
Toy, Hubert George, Birmingham.
Underwood, Albert Henry, Ipswich.
Wallace, Hugh Gray, Lancaster.
Walters, John, Llanboidy.
Webb, Ernest George, Bristol.
White, Fredk. Ernest, Nunhead.
Wickens, Thos. Isaac James, Southsea.

Election of Students.

The following, having passed the First examination and tendered their subscriptions for the current year, were elected "Students" of the Society:—

Francis, Henry St. D., Walthamstow.
Gibson, Francis A., Seaham Harbour.
Gibbs, Ernest Bromwich, Banbury.
Lumley, Harold, New Cross.
Pickering, William C., Northampton.
Stratton, Godwin, Newport, I.W.
Terrington, John H., King's Lynn.
Wild, Thomas Jabez, Maidstone.
Williams, Archd. Edmund, Rhymney.

Several persons were restored to their former status in the Society upon payment of the current year's subscription and a nominal restoration fee of one shilling.

Finance Committee.

The Secretary read the report of this Committee, which was of the usual character, and recommended sundry accounts for payment.

The President, as Chairman of the Committee, moved the adoption of the report and recommendations, in which he said there was nothing calling for special notice.

The motion was carried unanimously.

Benevolent Fund Committee.

The report of this Committee recommended grants to the amount of £32 in the following cases:—

A registered chemist and druggist, aged 86, who has had five previous grants. (Rhyme, N.B.)

A former member and subscriber who has been paralysed for many years. He has had six previous grants. (Hull.)

The widow of an associate who died recently in Wrexham Infirmary, after having received three grants from the Fund. She is endeavouring to support herself by needlework.

The consideration of one case was deferred until January, and one was not entertained.

The Vice-President, as Chairman of the Committee, in moving the adoption of this report, said the cases which came before them in which relief was recommended, were of a somewhat difficult nature. The Committee seemed to have no alternative but to make the grants they proposed to two who had already received assistance, and who, he feared, must be regarded as likely to become more or less permanent dependents on aid of this kind.

Mr. Hampson said he felt more free now he had left this Committee to comment on its work, and he thought it his duty once more to call attention to a reform which he had more than once unsuccessfully attempted to introduce. He did not intend at present to move any resolution, but he wished with all seriousness to ask the Committee again to consider the desirability of putting an end to systematic canvassing for annuities. It was perfectly palpable to the most ordinary understanding that the candidate who was well supported by canvassing, who had friends and money to spend, almost of necessity was found at the top of the poll. He saw on the present list the name of an unfortunate individual of the age of 86, and if he were chosen as one of the candidates, it appeared to him to be distinctly an act of cruelty to call upon him to spend money and time in canvassing. On a previous occasion an individual of over 80 actually lost his election through the excessive activity of other candidates, and he had to wait for another year. He did not ask the Committee at present to abolish the voting system, but he did hope it would recommend the Council to prohibit canvassing; and, further, that in any case members of Council would feel they ought not to take any part in canvassing themselves. Another and less important recommendation he wished to make simply in the interest of economy, and that was that the financial statement of the Benevolent Fund should not be printed monthly. It probably cost about £5 or £6 a year, and he did not think it was necessary, as the information could always be obtained if desired.

The President said he had no doubt the Committee would take into consideration the points raised by Mr. Hampson.

The Vice-President said he would take care to bring the matter before the Committee. He was very much in sympathy with Mr. Hampson on this question, but he feared it was almost hopeless at present to bring the majority of the Committee to the same way of thinking.

The motion was then put and carried.

The President, having stated that the printing of the Benevolent Fund account monthly was by order of the Council,

Mr. Hampson moved that the order of Council for printing of the accounts monthly be rescinded.

Mr. Corder seconded the motion, which was at once agreed to.

Library, Museum, School, and House Committee.

The report of this Committee included the following details:—

Library.

The report of the Librarian had been received, including the following particulars:—

		Attendance.	Total.	Highest.	Lowest.	Average.
June	Day		440	30	7	17
	Evening		127	11	2	6

Circulation of Books.	Total.	Town.	Country.	Carriage paid.
May	161	86	75	19s. 7d.

Donations to the Library had been announced (*Pharm. Journ.*, July 11, p. 34), and the Committee had directed that the usual letters of thanks be sent to the respective donors.

The Committee had recommended that the under-mentioned works be purchased:—

For the Library in London:—

Comey, Dictionary of Chemical Solubilities, Inorganic, 1896.
Pringle, Micro-Photography.
Coles and Cross, Modern Microscopy.

The Committee had also recommended that the Librarian be authorised to attend the annual meeting of the Library Association at Buxton in September, and that the sum of ten guineas be granted for his expenses.

Museum.

The Curator's report had been received, and included the following particulars:—

		Attendance.	Total.	Highest.	Lowest.	Average.
June	Day		486	34	12	19
	Evening		30	6	1	1

Donations to the Museum had been received (*Pharm. Journ.*, July 11, p. 34), and the Committee recommended that the usual letter of thanks be sent to the respective donors.

The President moved the adoption of the report and recommendations, which was at once agreed to.

Research Committee.

The President said this Committee had held a meeting on the previous day and recommended that Mr. Wilfrid Lean be recommended to the Council for election to the Redwood Scholarship for the session 1896-7, all the conditions having been complied with. He would move his election accordingly.

The motion was at once agreed to.

Mr. Bottle asked if there were no further report from the Research Committee.

The President said not at present. There would be a meeting before October, when a full and final report would be prepared.

Jacob Bell Memorial Scholarships.

The Examiners appointed to conduct the examination for the Jacob Bell Scholarships had reported that 30 candidates had competed for the Scholarships at the following centres:—

Birmingham 1; Brighton 1; Cardiff 1; Carnarvon 1; Cheltenham 2; Edinburgh 2; Exeter 1; Lancaster 1; Leeds 2; Liverpool 3; Manchester 2; Newcastle 1; Nottingham 2; Oxford 1; Southampton 1; London 8.

The envelopes bearing the mottoes of the successful candidates having been opened by the Committee appointed to make the award had been found to contain the following names:—

Harold Evan Matthews.
Frederick Alfred Upsher Smith.

The Committee had awarded the Scholarships to Mr. Matthews and Mr. Smith, subject to the approval of the Council.

The competitors who wrote under the following mottoes obtained upwards of two-thirds of the maximum number of marks (which is the minimum number for the award of a Bell Scholarship). The arrangement is in order of merit.

Finis Laborem;
Pioneer;
Spero (No. 1);
Arum maculatum;
Try again;
Olim neminisse Jubavit;
An effort;
Spero (No. 2);

The remaining competitors did not reach the standard of efficiency referred to.

The President moved that the report of the Committee be adopted and the scholarships awarded accordingly. It was very satisfactory to find that there had been a fair number of candidates, and that besides the two whose names had been read, there were some eight others who obtained sufficient marks to take the scholarship.

The motion was at once carried.

Manchester Pharmaceutical Association Scholarship.

The Committee reported that one candidate sat for the Examination for this Scholarship, and had attained the standard of marks entitling him to the award of the Scholarship.

The Committee, therefore, had awarded the Scholarship to

Thomas Oldham Barlow,

subject to the approval of the Council.

The President said it was satisfactory to find that the conditions laid down by the founder of this scholarship had now been fully complied with by a local candidate, and he had much pleasure in moving the election of Mr. T. O. Barlow to the Manchester Scholarship.

Mr. Allen said it was very gratifying to see that there had been such a good competition this year for the Bell Scholarship. Having been an unsuccessful competitor for this scholarship himself he could bear testimony to the great advantage gained by those who went in for these prizes, even although they might be far behind the top man in the list. He thought no opportunity should be missed of pointing out to pupils and apprentices the great power which studying for either of these scholarships gave them in their future career, which could not fail to be of use to them throughout their future career. Although not a Lancashire man himself, he was very pleased that at last, after several years, there had been a successful candidate for the Manchester Scholarship, and he hoped there would in future be a large competition.

The motion was then put and carried.

A vote of thanks was also passed to Messrs. Pascombe, Lucas, and Pinches for conducting these examinations.

The Herbarium Competition.

Professor Green reported on the Herbarium Competition, and on his recommendation the following awards were made:—

Silver Medal ..... Frank Giles.
Certificates of Honour ..... William Palmer. Joseph Milne.

Report of Examinations.

The following report on the examinations was presented:—

July 1896.

	Candidates.		
	Examined.	Passed.	Failed.
England and Wales:—			
Major	42	24	18
Minor	208	72	136
Scotland:—			
Major	7	3	4
Minor	185	61	124
First Examination	412	179	233

26 Certificates by approved examining bodies were received in lieu of the Society's First examination.

School of Pharmacy Prizes.

The reports of Professors Attfield, Dunstan, Green and Greenish and Mr. Ince having been read, the following list of awards was agreed to:—

Prize Awards.

Practical Chemistry.

Silver Medal ..... George Senter.
Certificates of Honour ..... John Arthur Dewhirst. Francis U. Stamp. Ernest Albert Umney.

Chemistry.

Silver Medal ..... Harold Wilson.
Certificates of Honour ..... Francis U. Stamp. Roger Payne. George Senter.

Botany.

Silver Medal ..... John Arthur Dewhirst.
Certificates of Honour ..... Edward Charles Spurge. Harold Wilson. George Senter.

Materia Medica.

Silver Medal ..... John Arthur Dewhirst.
Certificates of Honour ..... George Senter. Harold Wilson.

Pharmacy.

Silver Medal ..... Edward Charles Spurge.

Council Prizes Examination.

Professor Percy Frankland, Mr. Ransom, and Mr. Seward, who had been appointed to conduct this Examination, had reported on the competition for which there were 18 candidates. The envelopes bearing the mottoes of the successful candidates were opened and found to contain the names of G. Senter, E. C. Spurge, and F. F. A. Tunbridge.

The following awards were therefore recommended:—

Pereira Medal (Silver); and Books value £5 presented by the late Thomas Hyde Hills.

George Senter.

Pharmaceutical Society's Medal (Silver); and Books value £3, presented by the late Thomas Hyde Hills.

Edward Charles Spurge.

Pharmaceutical Society's Medal (Bronze); and Books value £2, presented by the late Thomas Hyde Hills.

Francis Fredk. A. Tunbridge.

The following are the mottoes of the remaining competitors for the Council Prizes arranged in order of merit:—

Nihil sine diligentia; There is a silver lining, etc.; Labor; Perseverance; Equisetum; Dare quam accipere; Ranunculus; Euonymus atro purpurea; En avant; Patmos; Labor omnia vincit; Crocus; Nil desperandum; Mens conscia recti; Alpha.

The President, in moving the adoption of the report and recommendations of the Committee, said the Council would no doubt notice, as was not unusual, that the same names often appeared frequently. That might be attributed partly to the comparatively small number competing, but more especially to the happy knack possessed by students of finding out who were the strong men among them. Their students in common with those of other educational establishments, found that one who was strong in one or two subjects, was strong in others. It was satisfactory, he thought, to find that a large number of prizes were now taken by their own students.

Dr. Symes, whilst thoroughly approving of not increasing the number of the awards, remembering that such increase must tend to decrease their value, said he hoped that the Council would see its way to offer a certificate of honour as well as a medal in pharmacy. Of late it seemed to him that subject had not received the attention paid to it in former times, when Professor Redwood commenced with the School; but he thought it had become the more important since many large establishments which were doing any appreciable amount of pharmaceutical work frequently do not take apprentices.

Mr. Carteighe said the subject had not been forgotten, but the suggestion was one which would require a little delicate treatment. One reason why such certificates as Mr. Symes had suggested were not granted in pharmacy was that it had been found such certificates, and even certificates of attendance, had been from time to time used as evidence of qualification, to the extent of identifying the holder as a registered chemist and druggist, and for such purposes had been put forward with the object of procuring public appointments. He believed, however, it would be found that the aim of Mr. Symes had been met in another recommendation which would come before the Council.

The report was then adopted, and a vote of thanks was passed to Professor Percy Frankland, Mr. Ransom, and Mr. Seward for their report on the competition for the Council examination prizes.

The Society's School.

The Secretary read the following:—

Report of the General Purposes Committee on the reorganisation of the Society's School.

The Committee has carefully considered the subjects referred to it by the Council, which were embodied in the resolution of Council of April 1, viz.:—"To consider and report (*a*) as to the steps to be taken to fill the vacancy caused by the retirement of Professor Dunstan, and (*b*) to consider generally the relations of the Society to its educational work and to the School of Pharmacy." With regard to paragraph (*a*) of the reference the Committee has already reported, and the Council has, upon its recommendation, appointed Dr. J. Norman Collie, F.R.S., Professor of Chemistry, to deliver the lectures in chemistry and physics, to supervise the practical work of the School Laboratory, and to direct the Society's Research Laboratory. As regards the latter portion of the reference, the Committee deems it expedient that the Council should in future assume the direct control of the Society's School of Pharmacy, and that the teaching be entrusted to a Professor of Botany, a Professor of Chemistry, and a Professor of Materia Medica and Pharmacy, assisted by efficient demonstrators and assistants appointed by the Council. The Committee is also of opinion that the ordinary period of instruction for the Minor examination, extending from October to March, is inadequate to secure that thoroughly sound pharmaceutical education which it has been the aim of the Council to encourage and promote. The Committee, with a view to giving effect to the foregoing opinions, submits the following recommendations:—

(*a*) That the fees payable by Students in the School of Pharmacy be paid to the Society, and that a proportion of such fees, after providing for expenses, be paid to the Professors in addition to their stipends.

(*b*) That the stipends be as follows:—

Professor of	Botany.....	£250 per annum.
,,	,, Chemistry	£500 ,, ,,
,,	,, Materia Medica and Pharmacy	£250 ,, ,,

(*c*) That the Library, Museum, School, and House Committee annually nominate one of its members to act as Visitor to the School, and that he be authorised to attend the meetings of the School staff, and report from time to time to the Committee.

(*d*) That Professor Green, F.R.S., be appointed Professor of Botany for the year commencing October 1, 1896, the appointment to be on the terms previously mentioned

(*e*) That Professor Greenish, hitherto Professor of Materia Medica, be appointed Professor of Materia Medica and Pharmacy on the terms previously mentioned, for the year commencing October 1, 1896. The Professor to devote the whole of his time to the duties of his chair, and not to accept any other office or appointment, or engage in any business without the consent of the Council.

(*f*) That the following appointments be also made for the year commencing October 1, 1896:—

Assistant Lecturer and Senior Demonstrator in Chemistry .....Arthur Lapworth, D.Sc.

Demonstrator in Materia Medica and Pharmacy..Harold Wilson.

(*g*) That the Elementary course be extended to the full period of the Session, *i.e.*, from October to June; and that the Advanced Course extend from October to March.

(*h*) That the fees payable in respect of such courses of instruction be in accordance with the table on page 20 of the School Prospectus, now about to be issued.

The work of the Committee has been greatly facilitated by the considerate action of Mr. Joseph Ince, who has placed his resignation of the Lectureship in Pharmacy in the hands of the President, with a view to give the Committee full opportunity of making such arrangements as in their judgment seemed best for the future welfare of the School.

Considering the fact that Mr. Ince has been associated in various ways with the work of the Society for nearly fifty years, that he devoted much of his time many years ago, without remuneration, in assisting Jacob Bell and Dr. Redwood in the literary work of the *Pharmaceutical Journal*, and that his labours generally have tended to the advancement of pharmacy and of the Society, the Committee recommends that an annuity of £100, as from June 24 last, be offered to Mr Joseph Ince, late Lecturer in Pharmacy, and that this recommendation, when approved by the Council, be so entered in the Society's records.

The President, in moving the adoption of this report and its recommendations, prefaced his remarks upon it by saying that he felt it a great privilege to be the President of the Society on the occasion of its taking this new departure, and to move the Council's acceptance of a scheme which, save for a few minor details, would cover the arrangements for the ensuing session. He should on such an occasion as this like to speak at some length. He then proceeded as follows:—

Promotion of Education by the Society.

Let me, in the first place, remind you that the Charter imposed upon the Society the duty of promoting pharmaceutical education, and that that duty has from the first been fully recognised. Our School has now been existent for fifty-four years, and during that time the Society has ungrudgingly spent a considerable portion of its income in this department of its work. It may interest you to know that during the last twenty-five years no less a sum than £19,000 has been contributed towards the endowment and maintenance of the School and in the promotion of research. This large sum, moreover, does not include the cost of repairs of the School premises, cleaning, fittings, and many other expenses. We have had eminent professors and teachers since the foundation of the School, and we have the satisfaction of knowing that very many of those who have done credit to our common calling have received their training within these walls. But things do not stand still, and nothing has been more marked during the last fifty years than the rise of the standard of general education. In this advance the art of pharmacy has also shared, and the standard of proficiency required of the pharmacist of the present day is, and must be, higher than that of his predecessors. Many of us are convinced that a compulsory curriculum, such as obtains in other civilised countries, would be of great advantage, and the Council has on more than one occasion affirmed its desirability; but hitherto efforts in this direction have been unsuccessful. We have, however, in our present proposals a scheme for a voluntary curriculum which is I think a great advance on our previous arrangements, and one which will, I hope, be appreciated. Previous to 1873 the Council had the complete control of its School, but in that year the Council, thinking it an anomaly that the Society should be both a teaching and an examining body, handed over a large portion of the responsibility to the professors, at the same time continuing to subsidise the School to a large extent. Arrangements were also made about that time that both the elementary course for the Minor Examination and the advanced course for the Major should be given in one session.

Necessity of Further Changes.

These changes may have been expedient then, but it is now thought advisable to revert somewhat to the old state of things; and I am glad to say that the Council has resolved to take again the sole control of the School, and has determined that the two courses shall be considerably extended. Here I may remind you that views as to the incompatibility of teaching and examining functions have in recent years been considerably modified. As an instance of this it may be noted that the majority of the scientific and educational authorities of the Metropolis are agreed in seeking powers for teaching in connection with the London University. I now refer a little more in detail to the proposed changes. It is suggested that the fees of the students shall be paid direct to the Society, and the salaries of demonstrators, assistants, etc., as well as the expenses in connection with materials, maintenance, etc., shall be deducted therefrom. The remaining sum will be divided between the three professors and the Society. The professors will, in addition, receive fixed stipends. The scale of fees has been carefully considered and modified in several particulars, and students will be strongly urged to take the whole curriculum and pay the inclusive fee. For the elementary course, extending over about nine months, the inclusive fee will be slightly higher than for the present shorter course, but considerably less than for the present double course. The inclusive fees for the two courses, extending over fifteen months, will be a little more than what has hitherto been paid for one whole session. These and other details are to be found in the prospectus which was approved by the General Purposes Committee yesterday. It is also proposed that a Member of Council should be nominated to act as a visitor to the School, to attend the meetings of the staff, and to report from time to time to the Library, Museum, School, and House Committee.

The School Staff.

As regards the *personnel* of the staff, I may be allowed to remind you that the re-arrangement of our School at this particular time has been made practicable, owing to the acceptance of an honourable position at the Imperial Institute by Professor Dunstan, whose past services we are glad to recognise, and whose future career we shall watch with interest. On the resignation of Professor Dunstan, the desirability of having one Professor of Chemistry, who should have the charge of the lectures and of the practical work in the laboratory, as well as of the Research Department, was fully recognised by the Council, and on this opinion being made known, Professor Attfield placed every facility in our way by sending in his resignation. He at the same time expressed his approval of our scheme, and his regret that he felt his age would not allow him to become a candidate for the new appointment. Here I should like to place on record my appreciation of Dr. Attfield's work in connection with the Society and of his kind consideration in facilitating the carrying out of our new proposals. The Chair of Chemistry has already been filled by the appointment of Dr. Norman Collie, whose attainments and past record encourage us to feel confidence as to the future teaching of chemistry, and as to the character of the original work that will be carried out in our Research Laboratory. And here, speaking for myself, may I say that I trust the Council will give its Professor of Chemistry a tolerably free hand both as to advanced teaching and research, which naturally go hand in hand. I doubt not that our new Professor will see that there are many pharmaceutical problems requiring investigation, but let us not attempt to bind him too tightly with pharmaceutical bonds, for research cannot well be done to order. As regards the Chair of Botany, the Council are asked to-day to re-appoint Professor Reynolds Green, whose extensive knowledge and original investigations in his particular subject are known to us all. It is also proposed that Professor Henry Greenish should be appointed to the Chair of Materia Medica and Pharmacy, and that he should be required to devote all his time to the duties attaching to his chair. From his training and experience, he has special qualifications for this position, and we believe that he is extremely loyal to the best interests of the Society. The association of materia medica with pharmacy has been much facilitated by the kind consideration of Mr. Ince, who, knowing that we were anxiously working in the direction of consolidation, has placed in our hands his resignation. Mr. Ince has done good work for many years as Lecturer in Pharmacy, and during his whole life has rendered many loyal services to the Society which we are glad to recognise.

The Teaching of Practical Pharmacy.

The department of practical pharmacy will continue to supply a want arising from the imperfect knowledge gained during apprenticeship. One cannot but lament that so many of our young men acquire very little of the practical and theoretical knowledge of pharmacy during the time, and under the conditions when it should be best learned. Apprenticeship is, I fear, in many cases, more or less a farce. For some time past the Pharmaceutical Society has recognised this state of things, and has therefore felt it incumbent to include in its syllabus the teaching of practical pharmacy. This will be continued and extended in our new arrangements, and I am sorry that for the present at least, any considerable development of this portion of our work will not be possible owing to want of suitable space. I hope, however, that under the direction of Professor Greenish, our students will gain a considerable amount of skill and knowledge in the practice of pharmacy. In addition to this practical knowledge, an acquaintance with the sciences on which our art is founded is also necessary. The possession of this scientific knowledge gives the man who possesses it a distinct advantage over his less cultured neighbours, with the result that he benefits financially and socially.

Value of the Extended Curriculum.

I trust that parents and guardians will be convinced of the great value which this extended curriculum offers, and will place every facility in the way of those dependent on them, to enable them to enter such a school as ours. Let them impress on these youths that though examinations must be prepared for and passed in order to obtain legal qualification, the acquirement of sound knowledge is of the utmost importance as regards their future prospects. Let them reflect that time and money expended with this object are not thrown away. Finally, we do not propose to compete with other schools except on the ground of efficiency. We trust that before long there will be in many centres schools of pharmacy in close association with universities and other public institutions, and that these will do good service in the cause of pharmaceutical education. We are now making somewhat of an experiment; it rests with our members and friends to make it a success by affording us their help and sympathy. Let us endeavour to make our School as far as possible a model college of pharmacy which may in due time fairly claim to become a recognised part of the teaching University of London.

The Vice-President, in seconding the proposal for the reception and adoption of the report so ably and clearly placed before the Council by the President, said he believed the members of the Council who had drafted this report were all full of hope and confidence in the scheme they had brought up. They had not taken this step without very careful consideration by the Committee—as careful a consideration as he supposed they had ever devoted to any subject, as they did from time to time, considering every detail with the view of judging what the ultimate result might be. His own feeling was that the proposed new arrangements would be attended with the most happy results. He thought that to bring the Council more in touch and contact with the work done in the School could not fail to be beneficial, and that the consolidation of the two chairs would also be attended with satisfactory results. In short, he believed the more the scheme was considered by those members of the Council not on the Committee, and therefore not acquainted with the details, the more it would recommend itself to their judgment.

Mr. Hampson said he moved a resolution some twenty years ago to the effect that the Society should cease to educate, and that examination and education ought to be severed. Perhaps his views were too advanced for his colleagues, but, at any rate, they were not accepted. Since then a new feeling had sprung up in the public mind, with reference to education and examination, and it was no longer considered undesirable that the two offices should be performed by one institution. What influenced him, in the first place, was this: He felt that however satisfactory the education given in that establishment might be, the Council had not the intimate relation with it and the control over it which such an important work required, and he felt sure that in accepting the proposals of the Committee and re-establishing the School on a firmer and broader basis they were doing the right thing. The Society's School ought to be pre-eminent in Great Britain. They had in it unusual facilities for education. On the one hand they had and would have efficient and thorough professors, and on the other hand they had laboratories with a library and museum unequalled in Europe, and he believed

these combined advantages would induce a gravitation of students to Bloomsbury Square. He hailed this change with great pleasure, and nothing gave him greater satisfaction than the fact that the Council was thoroughly convinced that the education carried on there must be constantly supervised and efficiently controlled, and that whenever any steps were necessary to make the School pre-eminently the best in England, such steps would be taken.

Dr. Symes said the President had so thoroughly covered the ground that any further remarks were hardly necessary. He hoped the modification of the School fees would induce a larger proportion of the students to go on to the Major Examination. There was no doubt that the knowledge gained by education was a sufficient reward for the trouble taken, but it was so difficult to get young men to see it, that many of them were satisfied in obtaining that minor knowledge which would enable them legally to conduct a business. He hoped this arrangement would cause them to take a deeper interest in the work, and in future to see a larger percentage become pharmacists of the first class. The public he feared scarcely distinguished between a pharmaceutical chemist and a chemist and druggist, but on the Continent there was a more marked distinction between first and second class pharmacists, and some day it was possible means might be found whereby pharmaceutical chemists would get further recognition. Even at present he was more eligible and more likely to obtain any appointment for which he competed, and when in business he was freed from jury service. Last, but not least, he had the greater knowledge which enabled him successfully to compete with his rivals, even in the unfair rivalry which now prevailed. The Society was asked to protect its members, and it did all it properly could to that end; but, after all, the greatest protection was that which a man afforded himself by his greater knowledge, and his application of that knowledge to his calling.

Mr. Carteighe reminded the Council that if this recommendation were approved the School would be put very much on the basis on which it was originally founded. At a period when it was thought the School was rather a trouble than otherwise because it could not be effectually controlled, the professors unfortunately persuaded the Council to allow them to run two courses in one session, thinking it would give facilities under the Act of 1868 to a number of men who could not afford time for a longer period of study. That fact alone placed the School at a disadvantage, because no school could be efficient if enough time were not allotted to the curriculum. Happily, during recent years, that had been somewhat modified, and now at last there was an opportunity of placing the School pretty much in the position it occupied at starting. The qualification contemplated by the founders was that of Pharmaceutical Chemist, and the men who came up in the voluntary days had a good training in pharmacy, for in those times there were real apprentices and real masters. They had read what there was to read in elementary chemistry and botany, and many of them had performed experiments behind the counter or in their own bedrooms. The first period of the School was the most brilliant part of its history, and if they had failed since in producing as many brilliant men it was because of the disposition to sacrifice everything to examinations, and of the cry on the part of parents and guardians to get through in the shortest possible time. He believed he had succeeded in showing to large meetings of their members in various parts of the country, that the best capital which could be invested by parents and guardians was to give young men time enough to obtain as their qualification that thorough knowledge which would enable them to become not only registered men but strong men. If their School did not now turn out to be successful he should be quite prepared to consider a thorough rearrangement of it, closing it entirely to Minor candidates and keeping it open simply as a school for qualifying as pharmaceutical chemists. But he believed it would succeed; in fact, they must make it successful, and if the staff supported them, not only would it be a good School, but it would turn out a larger number of good men—men who would do well without capital and succeed in getting extremely good appointments. Such appointments were becoming more and more numerous, for the capital of the country was so great that in manufacturing and other businesses there was a constant demand for the skilled chemist. What was wanted by the intelligent pharmacist was not so much capital as extra brain power, and in the spirit of the founders they were giving opportunities to men to gain that power. He believed it would have been unwise at any time to give the go-by to the School or to subsidise any institution to carry it on. The experience of all corporate bodies was that where there was no education—where it was simply an examining body—it became effete and greedy of money, and he could point to institutions in London at the present time which from these causes were dying of *ennui*. No stronger claim could be made on the appreciation of the public than to point out, as the President had done, that they were spending at the rate of £1000 a year from the subscriptions of comparatively poor chemists and druggists in carrying out those precepts of the true guild which everybody held to be among the finest institutions of this country. The last paragraph of the report referred to the resignation of Mr. Ince. It recommended that he be offered an annuity in consideration of the services he had rendered to the Society, which were not confined to his duties as lecturer. Few men had been more closely associated with Mr. Ince than himself. When he (Mr. Carteighe) first came on the scene, the two men most constantly in the house, assisting in various ways, and in the conduct of the Journal, were Mr. Joseph Ince and Mr. Daniel Hanbury. For many years previously they had given Jacob Bell, the one a special knowledge of materia medica and pharmacy, and the other, literary skill. Mr. Ince wrote gratuitiously for the Journal; he had been to Paris, and in those days was probably the only man in London who knew all about recent French pharmacy. He had written papers for the Conference and for evening meetings, notably that wonderful paper read at Nottingham thirty years ago on pharmaceutical ethics. He had done an immense amount of work without remuneration, which thoroughly justified the Council in making him this offer. He was beloved by all who had ever come in contact with him; he was never a money seeker; and that was the sort of man they ought to honour. If there had been any possibility of making a position suitable to Mr. Ince's great acquirements—for he was something more than a pharmacist, he was an eminent classic scholar and knew a great deal more than many people imagined—which would have entailed a modest amount of work, the committee would have been glad to recommend his appointment to it; but after due consideration it was felt that the highest compliment which could be paid him and the best way to show that his services were appreciated was to ask him to accept this annuity, free from any conditions whatever. He would cease his official connection with the Society with great regret on their part, but he would still remain a member, and it was hoped he would accept this offer as an indication of the spirit in which every member of the Society regarded him.

Mr. Atkins said he had been a member of many committees, but never remembered any in connection with any public body on which he felt a greater sense of responsibility than this one, which dealt with the educational system of the Society. He said emphatically that he held with the importance of the Society being an educating as well as an examining body. His conviction was that the trend of public opinion was not in the direction of separating examination and education, though it was recognised that every possible precaution should be taken to prevent any collusion between the two offices. He need not point to the older universities, for even in connection with the London University there was a strong and growing feeling that the educating and examining functions should be combined. With that conviction, he felt it was the duty of the Society not to cease to educate, but to educate thoroughly. This report was the result of the most careful deliberation, and he believed it would receive general acceptance, and would be followed by a large accession of students. The result would depend largely on the professors. The enthusiasm in the School, and the success of the teaching would not depend so much finally on the Council as upon the professors themselves. If their work was well done the School would acquire confidence, and the whole country would feel that it was the premier and typical school of pharmacy. The President had paid a fitting tribute to the three gentlemen who were retiring, and he need not refer to them further except to say that he acquiesced thoroughly in all that Mr. Carteighe had said about Mr. Ince. He hoped there would be a long and graceful evening to his life, during which they would often see him at Bloomsbury Square. He believed they were that day making history and turning over an important leaf; and though the past had been highly creditable, the era about to be initiated would be fraught with lasting and beneficial results.

Mr. Allen said he had always felt a greater interest in the School than in any other department of the Society's work. He thought the members of the Council would be able to breathe a

little more freely when they had decided to take over fully once more the responsibility of the conduct of the School. It had had a brilliant history in the past, and probably could show as great a number of successes for an equal number of pupils as any school for purely technical training in existence, but he believed it would show still better results in future. He, too, had approached the work of this Committee with a great sense of responsibility, and no doubt every member felt the same, and though the report was brief, it represented a great deal of thought. If the re-organisation of the School only had the effect of making the members at large understand the real position of things better, it would be a great point gained. One important point was the division and enlargement of the curriculum, embracing a ten months' course for the Minor examination, and an advanced course for those going up for the Major. This was a most valuable opportunity for young men, and he hoped they would appreciate it.

The President in putting the resolution said he had perhaps not referred sufficiently to the Major examination in his former remarks, and he was glad Dr. Symes had referred to it. He always impressed on young men the advisibility of going in for the Major qualification.

The resolution was then put and carried unanimously.

Inaugural Sessional Address.

The President announced that Professor Brudenell Carter, F.R.C.S., etc., had kindly consented to deliver the inaugural address to the students on Monday, October 3, at 3 o'clock.

Annuity to Mr. Joseph Ince.

The President then moved "That in consideration of the services referred to in the report of the General Purposes Committee, an annuity of £100 from June 24 last be offered to Mr. Joseph Ince, late Lecturer in Pharmacy in the Society's School." After the very graceful way in which the matter had been referred to by Mr. Carteighe, it was not necessary to say anything further, but he might remind the Council that Mr. Ince was a member of Council from 1866 to '70, and that he was an Examiner from '67 to '73. He had been for fourteen years Lecturer in Pharmacy, and in many ways had shown his loyalty to the Society.

The Vice-President seconded the motion, which was carried unanimously.

Appointment of Professors.

Professor J. Reynolds Green was formally appointed Professor of Botany for the year commencing Oct. 6, 1896.

Professor Henry Greenish was appointed Professor of Materia Medica and Pharmacy for the same period.

It was resolved, on the motion of the President, that certain chemicals and apparatus, the property of Professors Attfield and Dunstan, and of Mr. White, be purchased for the Society at prices named in the resolution.

Correspondence.

A letter which had been received from the Nottingham and Notts Chemists' Association, containing certain resolutions passed at a general meeting of this Association, was referred to the General Purposes Committee.

Legal Business.

The Council went into Committee to hear and consider the report of this Committee dealing with legal proceedings.

On resuming, the report and recommendations were adopted, and special resolutions passed authorising the Registrar to take proceedings against the persons named therein.

PUBLICATIONS RECEIVED.

Obesity, its Cause and Treatment. By Thomas Dutton, M.D. Pp. 42. Price 1*s.* 6*d.* net. London: Henry Kimpton, 82, High Holborn, W.C., and Hirschfeld Bros., Bream's Buildings, Fetter Lane, E.C. 1896. From the Publishers.

Mededeelingen uit 's Lands Plantentuin No. xvi. Bijdrage No. 3 tot de Kennis der Boomsoorten van Java. Door S. H. Koorders en Dr. M. Valeton. Pp. 320. Batavia—'s Gravenhage: G. Kolff and Co. 1896. From the Publishers.

PROCEEDINGS UNDER THE PHARMACY ACT.

The Sale of "Killing Bottles."

Pharmaceutical Society of Great Britain v. *Meek.*

On the 30th ult., at the Brompton County Court, before the Deputy-Judge (Dundas Gardiner, Esq.), the Council of the Pharmaceutical Society of Great Britain sued E. H. Meek, of 56, Brompton Road, for a penalty of £5 for keeping open shop for the retailing of poison contrary to the provisions of the Pharmacy Act, 1868.

Mr. T. R. Grey, instructed by Messrs. Flux, Thompson, and Flux, appeared for the Society. Defendant appeared in person.

Mr. Grey, in opening the case, said that the defendant was a naturalist and plumassier, carrying on business at 56, Brompton Road, and he was sued for keeping open shop for the retailing, dispensing, or compounding of poison, the poison being cyanide of potassium, which was contained in a bottle called a "Killing Bottle," which he understood was used for killing moths and butterflies—the quantity of poison in the bottle was nearly 200 grains. The small amount requisite to kill an adult person would make the court appreciate the dangerous nature of the substance. After referring to various sections of the Statute he pointed out that defendant's name did not appear upon the Register of Chemists and Druggists, and, therefore, he could not sell the article in question, and that by Section 17 of the Act it was necessary even for chemists in selling such poison to comply with various requirements and formalities.

John Partridge, examined by Mr. Grey: On March 30 last he went to defendant's shop at 56, Brompton Road and purchased a "Killing Bottle"; he paid 1*s.* 6*d.* for it—subsequently he handed it to the analyst.

Ernest J. Eastes, F.I.C., examined by Mr. Grey: He had analysed contents of the "Killing Bottle." It contained a firm solid cake made of potassium cyanide and plaster of Paris. About one-sixth part of the cake contained 33 grains of potassium cyanide. Assuming the cake to be uniform the total quantity of potassium cyanide present would be nearly half an ounce. Cold water would dissolve out sufficient of the cyanide to produce a highly poisonous fluid. Five grains of potassium cyanide was sufficient to kill an adult.

Defendant said he had sold the "Killing Bottle" for years and others were selling it.

His Honour: You are selling cyanide of potassium. If I had power I might reduce the penalty, but I have not. I must find for the plaintiffs for the penalty claimed and costs.

ANSWERS TO QUERIES.

Lure for Rabbits.—A query such as yours savours of possible breaches of the game laws. The following is said to entice rabbits round the spots where it is laid:—Oil of anise, 2 parts; oil of fennel, 1 part. A few small bunches of parsley or carrot leaves will also attract the animals. [*Reply to* "Game."]

Hardening Rubber.—You will not get anything to answer your requirements without much experiment, but if you succeed in making a perfectly impenetrable varnish, it will mean a fortune to you, since this is the great desideratum for bicycle tyres. Possibly if you dissolve rubber in carbon bisulphide and incorporate fine silica and sulphur it would act as a protective varnish. That would probably be the direction in which you should investigate. [*Reply to* G. W. G.].

Microscope.—The price seems extremely low, but you should send fuller information if you require a definite answer. Enclose a detailed description of the instrument, with an illustration if possible. [*Reply to* Alex. Allan.]

J. H. Watson.—It is mugwort, *Artemisia vulgaris.*

G. L.—See correction in Journal for July 25, page 80.

CORRECTIONS.

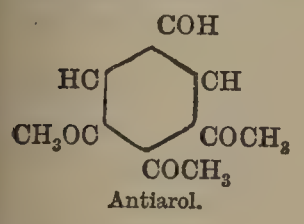
Conference Report.—On page 93, column 1, line 5, for "radiometer tubes" read "radiant matter tubes." On page 109, column 1, line 15, for "Mr. Schering" read "Dr. Schleich."

THE MILKY JUICE OF ANTIARIS TOXICARIA.*

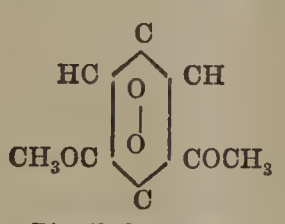
BY H. KILIANI.

Having received from Professor Boehm, of Leipzig, a considerable supply of this material collected by Mr. Hrolf Vaughan Stevens, the author undertook its chemical examination. The juice was partly dried down to a semi-solid condition by exposure to the sun, and partly as taken from the tree, with the exception of an admixture of methyl alcohol.

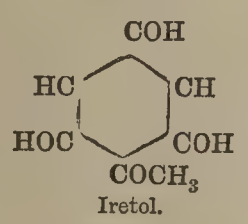
The method of treatment adopted was first shaking the juice several times with ether; the solution thus obtained gradually became turbid on distillation, depositing a tenacious resinous mass. After ether was entirely removed the reddish coloured, slightly alcoholic liquid was decanted off from the resin, and on evaporation yielded crystals of a substance not hitherto observed in the juice, but identical with the trimethyl ether of tetraoxybenzene described by Will,† to which the author gives the name antiarol‡: it is sparingly soluble in cold water, more so in boiling water, and crystallises out from the solution on cooling in long needles and quadratic or rhombic plates, melting at 146° C. Antiarol is readily soluble in alcohol, sparingly in ether: the water solution gives a slight yellowish-green coloration with dilute solution of ferric chloride. Sulphuric acid containing iron salt gradually produces a wine-red colour. Antiarol is a neutral substance having a composition represented by the formulæ $C_9H_{12}O_4$. When the water solution is treated with chromic acid a methyl group is eliminated, with production of dimethyloxyquinone, $C_8H_8O_4$. Antiarol is closely related to the iretol of de Laire and Tiemann;§ the constitution of these compounds being respectively as shown by the following formulæ:—



Antiarol.



Dimethyloxyquinone.



Iretol.

The benzoyl derivative, $C_9H_{11}O_4(C_6H_5CO)$, crystallises in needles, is insoluble in water, readily soluble in boiling alcohol, and melts at 117° C.

The watery liquid remaining after extracting the juice with ether mixed with an equal volume of 95 per cent. alcohol gave a voluminous deposit that was separated by means of a suction pump it was dried by exposure to the air, and then extracted with petroleum spirit until most of the resin was removed; the residue was a dark brown friable mass containing some antiarin, which could be separated by digesting the powder with 85 per cent. alcohol.

The liquid separated by suction was evaporated down in a vacuum apparatus, and on adding more alcohol a deposit was again thrown down which hastily dissolved in water and yielded crystals of potassium nitrate.

The alcoholic liquid evaporated and diluted with cold water gave characteristic crystals of antiarin.

The resinous deposit separated on addition of alcohol and by extraction with potassium spirit was well washed with absolute alcohol, dissolved in petroleum spirit, and precipitated in fractions by adding absolute alcohol, the first fractions being sticky, the last pulverulent or crystalline and capable of being crystallised by dissolving in the least proportion of petroleum spirit, and then adding absolute alcohol. When sufficiently purified it crystallises out of a boiling absolute alcohol solution in long silky needles, melting at 173°·5 C., and was found to have a composition represented by the formula $C_{24}H_{36}O$.

The glucoside antiarin is easily purified by re-crystallisation from a boiling water solution: it begins to melt at 220°, but is not fully melted till the temperature reaches 225°. The composition of antiarin is represented by the formula $C_{27}H_{42}O_{10}+4H_2O$.* When warmed with dilute hydrochloric acid it is split up as shown by the following equation:—

$$C_{27}H_{42}O_{10} = C_{21}H_{30}O_5 + C_6H_{12}O_5$$

The sugar thus produced is an isomer of rhamnose, and there is always more or less resin formed.

Antiarigenin has a composition represented by the formula $C_{21}H_{30}O_5$: it is but sparingly soluble in 95 per cent. alcohol: it is best purified by solution in warm methyl alcohol and treatment with animal charcoal, and can then be obtained in brilliant needles: at 170° it becomes intensely yellow, but does not melt under 180° C.

The nature of the sugar formed by the breaking up of antiarin indicates an interesting resemblance between antiarin, digitalin and digitoxin, since the sugar yielded by all of these substances contains less oxygen than normal sugar.

* Abstracted from *Archiv der Pharmacie*, 234, 438.
† *Berichte*, xxi., 612.
‡ The author prefers this name to the longer one.
§ *Berichte*, xxvi., 2027.

* According to Mulder the composition of antiarin is represented by the formula $C_{14}H_{20}O_5+2HO$ (*Annalen*, xxviii., 304; and Watts' Dictionary of Chemistry,' i., 282).

WHITE WINE VINEGAR.

BY BARNARD S. PROCTOR.

It is to be regretted that the paper on white wine vinegar and the discussion which took place at the recent Conference meeting, did not include the consideration of one or two points which should have been brought under the consideration of the public, and more especially of chemists, had Mr. Allen's evidence and that of other witnesses come before the court at Stafford in a hearing of the appeal case of Boots', Limited.

The point I was most anxious to see enforced was that no tradesman should be punished for supplying goods not of the nature desired by the purchaser, if the purchaser does not ask for them by a correct name.

I contend that "white wine vinegar" is not a strictly correct name for any article known in commerce, because among the various articles so named, the wine vinegars are not white, and the white vinegars are not the products of wine. If the purchaser did not get what he desired, he was as much to blame as the seller, because he did not ask for it correctly, and did not make it clear to the tradesman what he desired. I believe in this particular case the purchaser did get what he wanted—he wanted to get dilute acetic acid, he wanted to get a conviction, and he got them both, but he got the latter by unfair means.

In the appeal case it was admitted that Boots', Limited, was not guilty of any intention of fraud, and as that admission was satisfactory to Mr. Boot, he withdrew his appeal. This withdrawal was not satisfactory to other chemists, who may in like innocence suffer unjust conviction and not be in so good a position as Mr. Boot to fight for justice.

I quite agree with Mr. Allen's view that the name white wine vinegar is an absurdity and "glaring tautology." If the purchaser wanted wine vinegar, and asked for it as such, I have little doubt he would either have got it or been told that it was not kept; or if he wanted distilled malt vinegar and had asked for it as such, there is no reason to say he would not have met with similar fair play; and if he had simply asked for white vinegar and had been supplied

with dilute acetic acid, there is ample justification for such practice. The use of the word "wine" prefixed to "vinegar" implies that in the absence of the prefix the word "vinegar" does not now mean sour wine. And the use of the word "malt" as a prefix equally implies that in the absence of that prefix, the term "vinegar" is legitimately applicable to other liquors than soured malt liquors. The definition in the B.P. would exclude all true vinegars resulting from the souring of wine; evidently it is not a definition of the meaning of the word, but only a definition of what the pharmacist is to use when vinegar is prescribed. The only case in which vinegar is ordered in the B.P. is in the making of brown soap plaster—a case where the percentage of acetic acid may be worth attention, but one in which the extractive matters and the ethereal flavourings cannot be of any use. The retention of vinegar in this connection is only calculated to bring official wisdom into contempt.

Mr. Allen, after alluding to the B.P. definition, says: "Its sponsor has since sought to extend the meaning of the term, so as to include any liquor of which acetic acid is the most tangible constituent." I do not know to whom he applies the term "sponsor," or the date he points to in the expression "has since," but I know that the word "vinegar" had been applied by high scientific authorities to acetic liquors obtained from the destructive distillation of wood long before the B.P. was compiled or thought of. Without hunting up antiquarian stories, for which I have generally very little respect, I turn to my own book shelves and find that Turner's 'Chemistry,' 4th edition, 1833—a work perhaps little known now, but a respected authority in its day—says: "The distilled vinegar which is now generally employed for chemical purposes is prepared by the distillation of a wood." Tomlinson's 'Cyclopædia' (1854), treating of vinegar, says: "A pure variety called 'distilled vinegar' was formerly produced by distilling common vinegar, a plan now almost entirely superseded by mixing pure acetic acid with water." In Roscoe and Schorlemmer's 'Treatise on Chemistry,' Vol. 3, page 484, the authors say: "Glauber in 1648 states that acetic acid is 'acetum lignorum,'" and "by rectification it may be made as good as acetum vini." And Durande, in 1777, calls strong acetic acid "vinaigre glacial."

These facts are surely sufficient to dispose of Mr. Allen's statement that the "sponsor for the B.P. definition of vinegar has since sought to extend the term so as to include any liquid of which acetic acid is the most tangible constituent." The facts are quite the other way, the food inspectors and analysts have sought to restrict the term vinegar according to their own ideas, and that in a very illogical way. Had they contended that nothing could be sold as vinegar but sour wine, their position would have been in some degree logical, but very unreasonable. The whole difficulty arises from attempting to affix a strict scientific definition to a word which has long been in use to cover a varied ground.

"Vinegar" might be reasonably translated as "wine acid," or the acid characteristic of sour wine, in the same way as oxalic acid is the acid characteristic of *Oxalis*, and it is no less oxalic acid if made from wood or sugar. Taken in this way the terms malt vinegar, wood vinegar, or wine vinegar become reasonable, as indicating the kind of acid, the source whence derived, and consequently the impurities to be expected. But white wine vinegar is still a foolish term, as no such thing exists in commerce. We should first require a white wine as the source, and white wine is a thing I have never seen or heard of except a few specimens which I have prepared, or seen prepared on the lecture table as a demonstration of the power of charcoal to abstract vegetable colours from solution.

"Vin. alb." was formerly an official name for sherry, but it was not white, consequently not correct, and the B.P. discarded it as an official name.

It is disappointing to find that Mr. Allen, after pointing out the folly of the name white wine vinegar, still uses the term in the subsequent paragraphs of his paper, and says that some dealers always supply real white wine vinegar when asked for it. Is it not more correct to say they supply wine vinegar which is not really white? It is disappointing to find men holding the influential position among chemists occupied by Mr. Allen and Mr. Carteighe perpetuating the use of this loose and objectionable expression when all the object to be attained would be better effected by the use of the terms wine vinegar to mean vinegar made from wine, malt vinegar to mean vinegar made from malt, and white vinegar to mean vinegar deprived of colour.

As to Mr. Carteighe's dictum, that they who have once tasted a salad made of "proper white wine vinegar will never touch malt vinegar afterwards," I question; does this statement "appeal to every sensible man?"

My experience of wine vinegar, extending over a longer period than Mr. Carteighe's business career, rather points to the conclusion that the majority of sensible men are not of Mr. Carteighe's way of thinking. A week or two ago a nobleman's housekeeper sent for three quarts of white wine vinegar, and to avoid any chance of disappointment three quarts of wine vinegar and three quarts of dilute acetic acid were both supplied. The wine vinegar was returned as being wrong, and the acetic acid was approved: such has been my experience for somewhere about forty years.

I very much doubt whether chemists generally would do wisely in attempting to persuade the public to take wine vinegar instead of malt vinegar or pure dilute acetic acid, though it is unquestionably desirable that goods should be sold for what they are, and labelled so as not to mislead. The discussion which has now drawn attention to the subject will probably save chemists from the risk of prosecution arising out of the sale of vinegar, but in any case of prosecution the seller should insist upon his right to have goods asked for by well-established and unequivocal names before he can be rendered liable for not selling what is demanded. The chemist must not be regarded as dishonest even though he sells sugar of lead (which is not sugar), cream of tartar (which is not cream), and milk of sulphur (which is not milk). Though the lavender water is not water, and the spirit of salt contains no alcohol, the analysts or the magistrates have no right to condemn any tradesman for selling these goods or any others under the names by which they are generally known.

Eucaine Hydrochloride as a Local Anæsthetic.—From the observations of many Continental workers it would appear that eucaine promises to be a useful addition to the list of local anæsthetics, if it does not to a great extent supplant cocaine in that direction. Kiesel finds that in dental operations, even when working with a 15 per cent. solution, no ill effects were produced, and perfect anæsthesia followed injection. Patients tolerated as much as 30 grains of eucaine without harm, while it was found possible to extract a whole set of teeth painlessly by using 15 grains of eucaine in strong solution. Peters reports most favourably of the new body in cases of extraction, while Gore employing only 1½ per cent. solution finds it preferable to cocaine in laryngoscopic examination, and also obtained a complete anæsthesia in operation with a solution of the same strength in a case of phimosis (*Therapist*, vi., 52). From France we get equally favourable reports; Berger has employed 1 and 2 per cent. solutions of eucaine hydrochloride.

NOTES ON THE USES OF DRUGS.

Introductory.

The power of drugs to cure disease has been the basis of medical treatment since the earliest time; but knowledge of the virtues of a particular drug has generally been acquired by accident; then followed its empirical use in various diseases.

It is only of late years that the composition of plant drugs, the separation of their active principles and the investigation of their physiological action have been properly studied. To-day research in laboratories has carried us one step further; endeavours have been made to find out the peculiarity of composition on which the virtue of a remedy depends; to make new and more powerful combinations; and finally their application for man's use has been suggested after their effects on the lower animals have been observed.

Drugs have power to prevent, to relieve, and to cure disease. For instance, inoculation with vaccine lymph prevents small-pox; the administration of lime juice prevents scurvy; opium relieves painful diseases; salicylate of soda cures rheumatic fever. Drugs that cure diseases are known as specifics; quinine cures malaria; iron cures bloodlessness or anæmia. There are very few such, the greater number only relieve the symptoms of disease. Nature has given the body great recuperative power. A broken limb unites if it is only kept at rest; an attack of dyspepsia subsides after a few hours if no more food is taken; one organ of the body will endeavour to do the work of another that is diseased; for instance, if one kidney is damaged the other increases in size and does double work; if both kidneys are out of order, the skin gets rid of as much water as possible. Drugs relieve disease by assisting the recuperative or compensatory efforts of the body or by dulling pain and mitigating the discomfort resulting from disordered functions.

In the following articles the action of drugs will be considered under various headings. There are some drugs that act on the digestive system, such as stomachics, emetics, purgatives, astringents, and so on; others excite or depress the nervous system; others, again, act on the blood, improving its quality and giving power to combat disease.

The glands of the body are acted upon by articles of the materia medica, hence there is the group of sialogogues, diuretics, and diaphoretics.

Parasites living on the human body, microbes invading it and causing disease, are destroyed by exanthelmintics and antiseptics respectively. Other drugs act on the respiratory and circulatory systems. There are two other large groups; one contains the alteratives and the second the antipyretics.

Unfortunately, no hard and fast line can be drawn confining a drug to one class, and that only. Each one acts on all the different parts of the body, and belongs in a greater or lesser degree to some of the groups already mentioned. Again, the same drug may act quite differently at different times; the action of a small dose may be exactly the opposite of a larger one, while some individuals have idiosyncrasies which may quite overthrow the intentions of the prescriber.

No one should order remedies who is ignorant of medicine; he who learns that bismuth stops vomiting and gives it to a man who is vomiting because he has a strangulated rupture would only endanger the man's life, so also he who gives croton oil, which he has learnt is a powerful purgative, to one suffering from constipation due to internal inflammation, may cause death.

A knowledge of disease is therefore necessary before drugs are ordered. The greatest good in medicine is obtained by accurate diagnosis and pathology, combined with careful therapeutics and pharmacodynamics. Modern pharmacy is valuable, since it attends to the careful selection and preparation of drugs as well as the scientific separation of their active parts; it also makes medicine pleasant to taste and convenient in form to administer.

Drugs may be given by the mouth, which is generally the most convenient way; or they can be applied to the skin for their local effect, as in the treatment of skin disease; or they can be rubbed into the skin and absorbed by the body, as when belladonna ointment is applied over joints to relieve the pain of acute rheumatism. Absorption is much more rapid when a blister is raised, and then cut and the drug applied to the raw surface. Hypodermic injection is frequently used to-day, because it is by far the most accurate method of introducing drugs; absorption is rapid and independent of the condition of the digestive system.

Injection into veins is known as the intravenous method; salt solution is added to the blood in this way after great loss of blood. The rectum can absorb drugs, but except in special cases administration by this method is avoided, because it is unpleasant, and absorption is slow; the dose given by the rectum is double that taken by the mouth. Articles of materia medica can be applied to the various openings in the body to produce either local or general effects—amyl nitrite is inhaled, cocaine solution is dropped on the eye, glycerin is poured into the ear.

In days gone by it was quite the custom to carry certain drugs about the person as amulets to ward off or cure disease. The corals that to-day form part of the equipment of a baby are a survival of the supposed virtues of this body to frighten disease away; some folk nowadays carry camphor in their pockets with the same object. This use of drugs is no longer recognised by scientific men. It is very difficult to determine on what physiological action the symptoms produced by a remedy depend; for instance, strychnine causes convulsions: to what is this due? The poison may have stimulated the brain or the spinal cord, it may have stopped the breathing and caused suffocation. As a matter of fact, strychnine acts by stimulating the nervous system.

A distinction should be made between the direct and the indirect action of a drug. Suppose a man swallows a teaspoonful of sulphuric acid; he will suffer immediately from intolerable pain in his stomach, that is the direct action, but he will also suffer from a feeling of faintness and weak pulse, as the result of an indirect action, due to the influence of shock on the nervous system.

There are three stages in the career of a drug in its course through the body. In the first stage it is in the alimentary canal, and not yet absorbed, here it may act mechanically or exercise a power of cure; the heavy bismuth powder prevents vomiting mechanically by its weight, and therapeutically reduces inflammation of the lining membrane of the stomach.

In the second stage a drug is absorbed and gets into the blood, where its specific action is exerted; strychnine taken by mouth or injected subcutaneously stimulates the activity of the spinal cord.

In the third stage the drug is excreted and passes out of the body. It may pass along the alimentary canal and escape with the fæces, it may pass out through the kidneys and be voided with the urine, or it may pass out in the perspiration or with expired air.

In their outward passage remedies often exert what is called their remote action. For instance, ipecacuanha stimulates the mucous or lining membrane of the wind passages, and is, therefore, an expectorant. Copaiba and cubebs stimulate and disinfect the urethra, and are useful in gonorrhœa. The action of a medicine depends upon the dose given. It is to be remembered that the body is only acted upon by the amount of the drug in the circulation at the moment. Consequently, when a hypodermic injection is given, the amount must be much smaller than when taken by the

mouth, for the whole quantity gets into the blood immediately; when it is taken by the mouth it is only absorbed little by little, and excretion is going on simultaneously with absorption. Some drugs have what is called a cumulative action, that is to say, a person is able to take a certain dose for a long while, then quite suddenly an identical dose produces a serious effect; digitalis is noted for this. It happens in this way; digitalis taken for a long time reduces the amount of urine passed; now, digitalis is eliminated from the body with the urine, hence, as the amount of water passed diminishes, so an increased quantity of digitalis remains in the circulation. This action, of course, produces the same effect as a large dose.

The efficacy of a remedy depends upon the time it is given and the condition of the person taking it. Purgatives act best if taken the first thing in the morning when the stomach is empty. Fever destroys the effect of many drugs, opium often producing excitement, instead of refreshing sleep when the temperature is high; far larger doses of cod-liver oil can be taken in cold weather than in hot, whilst large doses of opium can be taken when there is pain to be relieved.

Children are very susceptible to the action of some drugs, mercury they take well; opium, on the other hand, acts very powerfully on them. Tolerance for some poisons used as medicine is easily acquired, for instance, the Styrian mountain climbers can take as much as five grains of arsenic in a single dose; an opium *habitué* will chew 100 grains or drink a pint of laudanum. A habit or desire for taking some drugs is easily acquired, the alcohol craving being too well known to need comment here, whilst morphine has its victims, so also have ether, antipyrine, and even sulfonal.

(*To be continued.*)

THE MAKING OF AN HERBARIUM.*

BY CLEMENT B. LOWE.

A series of practical suggestions are wanted as to the best method of collecting, identifying, and preserving plants for making an herbarium.

In answering the above query, I would state that it is a pity that more pharmacists are not interested in field botany, as, aside from the valuable information thus to be obtained, the collection of plants is a healthful occupation, and tends to give the outdoor exercise which so many of them need.

In collecting plants a suitable receptacle for containing them is necessary, which should be as nearly air-tight as possible, so that the contents can be kept fresh for several days. A japanned tin box—about 17 inches long by 7 inches wide and 4 inches deep, with a lid opening nearly the length of the flat side—suspended from the shoulder by a strap, will answer the purpose well.

Many prefer to take a stout portfolio, either hinged on one side or fastened on both sides by straps, and containing numerous sheets of absorbent paper. They transfer the plants directly to it, as by so doing any injury to the plants is avoided and the whole can be transferred directly to the press on reaching home.

A knife or trowel for digging is of great use; the best is probably a trowel, in which the V-shaped grooved blade is driven directly into the handle. Professor Maisch used to carry a convenient cane, with a nickel-plated handle, shaped like a narrow grubbing hoe.

In collecting plants, care should be taken to collect those which are typical of the species, and yet variations from the typical form are also instructive and can be mounted by their side.

We always desire to obtain the inflorescence, and frequently also the fruit, as in some cases the latter is quite as important as the flowers, or more so, as in the case of the Umbelliferæ, where the distinction between the genera is based largely upon the fruit.

In the case of many plants, the radical (root) leaves should be gathered, as they are more characteristic than those growing upon the stem; *e.g.*, shepherd's purse has the root leaves clustered, and pinnatifid or toothed, while the stem leaves are arrow-shaped and sessile.

The root or rhizome should generally be gathered, as in a number of cases it is the official part of the plant, and it frequently has prominent characteristics; in the case of rare plants it is best not to do so, as some herbaceous perennials, like senega, have in this way been almost exterminated.

There is often quite a choice as to where your botanical excursion shall be made, different regions showing different floras. Those living in the neighbourhood of Philadelphia will find quite a difference between the floras of Pennsylvania and New Jersey, and no herbarium of this region would be complete without representatives from both localities.

After the plants are collected, the next step is their examination and the identification of unknown species. To do this successfully, one should have a sharp penknife, pair of dissecting needles, pair of pincettes, and a dissecting microscope, the best of the latter being one which has immovable hand-rests, like Barnes', although Sayre's dissecting microscope, while not so convenient in the laboratory, can be used in the field as well. [Huxley's dissecting microscope is a handy form.—Ed. *Pharm. Journ.*]

In the examination of an unknown plant, the height, shape, and epidermis of the stem should be considered, and whether endogenous or exogenous, although in most cases the venation of the leaves will show the latter just as well. The leaves should be examined as to phyllotaxy, venation, shape, and size. The flowers should be examined as to the parts present, their size, shape, colour, union, insertion, etc., and then vertical and transverse sections should be made, notes being made of the different observations.

When this has been done, the name can in most cases be speedily determined by means of the analytical key in the front of Gray's 'Manual of Botany' [or Hayward's 'Botanist's Pocket-Book'—Ed.].

Beginners will find it easier to analyse regular flowers of fair size, such as the corn cockle (*Lychnis githago*), which is frequently found in wheat fields, to the annoyance of the farmers; or what is still better, to begin with take known flowers, like the apple blossom or wild rose, find the description in the 'Manual,' and compare it carefully. After this has been done a number of times they will be better able to proceed with unknown flowers. [This is the plan followed in Oliver's 'Lessons in Elementary Botany.'—Ed.]

Those with but little knowledge of botany will find Mrs. Dana's 'How to Know the Wild Flowers,' in which they are classified according to colour, and many of them illustrated, an interesting book [English students will find Shirley Hibberd's 'Field Flowers' and Grierson's 'Lessons from Fields and Lanes' capital books for this purpose — Ed.], while if they desire to increase their knowledge, they will find Professor Bastin's 'Laboratory Exercises in Botany' [or Holmes' 'Botanical Note-Book.'—Ed.] a most valuable work. Gray's 'School and Field Botany' (revised edition) [or Lindley's 'School Botany'—Ed.] is also an excellent work, not so technical as the 'Manual,' and it includes many of the cultivated as well as wild flowers.

* Read before the Pennsylvania Pharmaceutical Association, at Mt. Holly Springs, June 17, 1896.

The next step is the preservation of the specimens. They should be dried between sheets of absorbent paper, with heavier sheets occasionally interspersed, sufficient pressure being made by means of weighted boards.

Perhaps a better arrangement for drying is to use for top and bottom an open frame or lattice work, each frame consisting of two layers of half-inch strips crossing each other at right angles, having a hook in the end of each strip. The sheets of drying paper are laid between the frames, and the proper pressure is made by means of a stout cord passing around the hooks, the whole being hung where there is a current of air.

In the case of hollow leaves like the *Sarracenia* (pitcher plants) or flowers like *Cypripedium acaule* (seamless lady's slipper) absorbent cotton should be placed in them to facilitate drying, and to preserve their outlines.

Specimens should be dried as rapidly as possible, to preserve their colour and general appearance, and the driers should be changed every day for five days; still better results will be obtained by changing them two or three times during the first twenty-four hours.

According to Schroeder (*Amer. Journ. Pharm.*, 1896, p. 132), heavy grey felt paper, saturated with a 3 per cent. solution of oxalic acid and allowed to dry, will preserve unchanged the colour of the petals, and in most cases the green of the leaves.

When the plants are thoroughly dried they should be poisoned by applying a nearly saturated solution of corrosive sublimate with a soft brush, the plants being laid on a flat dish, and afterwards placed between driers until the alcohol evaporates.

Then follows the mounting of the specimens. Sheets of white paper, 11½ by 17½ inches, about 30 lbs. to the ream of 480 sheets, are best for this purpose. They should be fastened to the sheets either by narrow strips of isinglass plaster, or better, directly by means of a liquid glue like Le Page's.

To the right-hand lower corner of each sheet should be affixed a label, something like the following, which, for the purpose of illustration, is written out, as it would be if affixed to the plant *Chelidonium majus*:—

> Herbarium, C. B. Lowe.
> Bot. Name, *Chelidonium majus*.
> Synonym, Celandine.
> N. O., Papaveraceæ.
> Locality, Tulpehocken, 4/22/'96.

Each specimen or all of the same species may be enclosed in a sheet of white paper of less weight than that upon which they are mounted.

All of the species of the same genus should then be enclosed in a genus cover of heavy manilla paper.

The name of the genus, with that of the natural order, should be written in a large hand upon the lower left-hand corner of the cover next the back. The name of the enclosed species can be written upon the lower right-hand corner. The genera can also be numbered according to Gray's 'Manual.'

The herbarium should be preserved in a suitable receptacle, free from dust. This may consist of a cabinet, with shelves of the proper width and depth for the genus covers to slide in easily, or of a number of plain boxes with shelves 4 or 6 inches apart and doors which shut flush. The names of the orders can be pasted upon the shelves or affixed to the edge of the genus board, which contains a list of the genera of the order, and is inserted at its beginning.—*American Journal of Pharmacy.*

CELLULOSE AND ITS DERIVATIVES.*

BY MESSRS. CROSS, BEVAN, AND BEADLE.

What has cellulose to do with photography? is a question which may have occurred to many. In the first place cellulose is an extremely common substance, and while it is, so to speak, the theatre of many of the most striking dramas of the molecular world, it would be itself popularly described as an extremely uninteresting substance. It is true it discharges a number of important functions in the natural world, and then employs a stupendous amount of capital and labour in fitting it for further uses in the human sphere. But the same might be said, for instance, of water; and it is not to be expected that a substance, colourless, inert, and devoid of positive characteristics, and above all of the commonest, should be able *per se* to excite the imagination. In the domain of science, on the other hand, nothing is "common"; and if a substance plays a large part in the natural order it is entitled to the more consideration. In endeavouring to treat scientific subjects from the point of view of general interest, these aspects always conflict, and the present is not likely to prove an exception. If, therefore, we venture on an "all round" treatment of the subject matter "in the hope that by any means we might save some" who, as yet, are in darkest ignorance of the position and function of this remarkable substance, cellulose, we are sure to offend fellow specialists who are well acquainted with the essential outlines of the subject, but who may expect disclosures of new matter containing suggestions of theoretical or technical progress.

Que faire

Perhaps if we address ourselves to the consideration of the uses of cellulose, actual and possible, in photography, we may succeed in getting somewhere near that highest level to which the lecturer can aspire, that is, to offend the least number.

Photographic processes depend essentially upon the two factors, the photo-sensitive substance and the medium through which it is distributed. This holds for photographic action in its widest sense, which is, indeed, of the widest, for it includes the whole arena of light actions.

What radiant energy accomplishes in the plant world we know as an aggregate: but the mechanism of its actions is as yet largely unknown. But here also as in the photographic plate we have the same essential factors, the photo-sensitive substance and the medium through which it is distributed.

In photo-sensitive substances we have the common property of absorbing light energy. The energy appears to undergo that kind of "appreciation" by which it becomes chemical or atomic. We are accustomed to changes of terms, or transformations in radiant energy. A familiar example is afforded by the "incandescent" gas burner: the hood or mantle of the special oxides of which it consists has the effect of changing the character of certain constituents of the total radiation of the flame, raising or lowering them to the condition associated with maximum luminosity. Another example, but of a different order, is afforded by the phenomena of electrolysis. The electric current is passed between two conductors through a fused metallic salt or its aqueous solution. The two constituents of the salt, metal and acid, are separated and appear each at its respective pole or conductor. This may be regarded in general terms as a communication of energy to a compound body, and the appreciation of the energy lands the constituents of the compound into the emancipated condition of elementary or dissociated molecules.

So much briefly and superficially concerning the main function of the photo-sensitive substance.

* Read before the Royal Photographic Society, London, June 9, 1896.

And what of the medium? The media actually used in practical photography are not many. They have one feature in common: they belong to the group of colloids. The term applies to a diversified group of compounds containing representatives of all the more prominent chemical types: bases, acids, salts, alcohols, esters, etc.

It distinguishes a common property of such compounds in solution, viz., that of forming, when dissolved, gelatinous and viscous liquids, as opposed to the limpid or mobile solutions of the compounds known as crystalloids. The group of phenomena summed up in these two antithetical terms were exhaustively investigated in certain directions by Graham, many years ago. But in recent years they have been more profoundly studied, and have in fact become one of the most prominent arenas of pioneer work in molecular physics. It is of course in the order of things that the problems of physical science should become more and more refined. The chemistry of a generation ago revelled in discoveries which were striking enough to excite the crudest intellects. Thus the enrichment of the world by the introduction of the coal tar colours and the colossal industry which has been built up on this foundation, offers broader features of interest which excite wonder and interest from whichever point of view regarded. We doubt whether the current and future developments of chemical science will prove attractive in the same sense.

Of the problems of more general import now engaging the active work of investigators we may cite the following as having a direct connection with our subject: the theory of solution, the mechanism of the process, and the actual molecular condition of substances in solution. More broadly the actual configuration of molecules in the various states of aggregation of matter, and the connection of physical properties with the order of configuration.

The theory of assimilation in the plant world. How radiant energy is brought in the plant cell to act upon such unpromising materials as carbonic acid and water and mould them into starch, cellulose, etc. The theory of photographic action in the narrower sense: what is the actual meaning of the "invisible image" produced by the impact of light on the prepared plate.

The connection of these groups of phenomena with one another may not be obvious, and it would take us too far afield to demonstrate their intimate relationships to those who have not as yet given any thought to the subject. It is sufficient for our present purposes to remind photographers that they are moving in very good company as regards the science of their art. We may go further in stating that the science of photography is intimately bound up with coming developments of the greatest moment.

It is important, therefore, that its working basis should be broadened as much as possible, and to include all substances or materials calculated to contribute. We cannot help thinking that cellulose is destined to play a more important part than heretofore, if not in the art, at least in its scientific developments.

This is our preliminary answer in general terms to the question "What has cellulose to do with photography?" We shall now demonstrate the more important properties of the substance in the hope of suggesting a few subjects of investigation and practical inquiry, which in the hands of experts should lead to results.

The external or mechanical properties of cellulose are remarkable, and there can be no better demonstration of the wide range of variations of aggregation and structure which are conditioned by these properties than an exhibition of specimens of cellulose in its most characteristic forms, natural and artificial.

Here we have of the former group, the fibres, cotton, rhea, calotropis; side by side we will place the new artificial silk or "lustra-cellulose," which has recently been the subject of much writing, *ad captandum populum*, in the daily press. Far be it from us to endeavour to invade the "precious" incredulity with which many will meet the statement that this "silk" is identically the same in substance as cotton. As a matter perhaps of unpleasant duty, we have to point out that its brilliant lustre is due merely to the fact that it is a solid cylinder of smooth and regular outline, whereas the cotton fibre is a flattened tube with membranous walls. The form of the "silk" favours regular and maximum reflection of light, that of the cotton favours the scattering and breaking up of the incident light.

Here we have a coarser thread, also prepared in continuous length by squirting a viscous solution of cellulose into a liquid which precipitates or solidifies it. This thread is carbonised for making the filaments of the electric incandescent light, the resulting carbon having great compactness or density. Here again we have the cellulose in the form of artificially prepared films, which are transparent and of great tensile strength. Again we have the cellulose in masses of a firm resistant jelly, a form in which it separates, combined with water from certain aqueous solutions to be afterwards described. In this form it has considerable elasticity, approximating in the mass to that of indiarubber, though without the exceptional texture of the hydrocarbon. This hydrate parts with its water with extreme slowness, and the cellulose molecules in aggregating together constitute a solid of extraordinary hardness and taking an extremely high polish.

These solids are so dense in texture that they are hardly amenable to wood-turning machinery, and the usual comment which is passed on a casual inspection is that they must have been submitted to an enormous pressure. As we have seen, on the other hand the only factor involved is the extraordinary cohesion of the cellulose molecules or particles. Of course in the natural word cellulose and cellulose compounds, which constitute the entire framework of the vegetable world, present themselves in an imposing array of structural forms from the tenderest silky mycelium of a fungus to the densest of woods such as *lignum vitæ*. But in these natural forms there are considerable variations of chemical composition which somewhat invalidate comparisons. We have therefore chosen the various forms of the pure substance, natural and artificial, as an object lesson of the great diversity of structural form which one and the same substance may assume. But we have now to deal with the more interesting question of the chemistry of this substance. So far we have remained in the region of sense-impressions the province of the chemist is in the sub-sensible region, which can only be entered through the channels of the imagination. At the same time the results of the chemist can be very well appreciated apart from a close study of their theoretical basis, and we must endeavour to give a brief chemical history of cellulose from this more limited practical point of view.

Cellulose is, for a compound of carbon, hydrogen and oxygen, a body of remarkable inertness. It entirely resists a number of very severe treatments, more especially is able to withstand the action of alkalies at high temperatures. It is difficult of attack by oxidising agents. The industrial value of cellulose and its unique position and functions in the vegetable world are largely due to these negative characteristics. If we compare cellulose with the well-known substance starch, to which it is in many respects nearly related, we find that both are aggregates of sugar or glucose groups.

Starch, on the one hand, is soluble in water and easily broken down in solution by certain ferments, to the simple sugars, of which it may be regarded as compounded. Cellulose is insoluble in water, and can only be resolved into sugars by the action of powerful reagents, such as sulphuric acid.

In its original fibrous and insoluble form, cellulose is therefore a

very unattractive substance. It is useful to the photographer in the various forms of paper which are employed in the art, but in these uses the negative characteristics of the substance are to the fore, and we shall therefore pass them by.

Special interest, however, attaches to cellulose when it is obtained in solution. There are three groups of treatment for obtaining such solutions.

(1) There are certain compounds of the metals which in aqueous solution dissolve cellulose directly:—

(*a*) Zinc chloride. When warmed with a 40 per cent. solution of this salt, cellulose swells up to a gelatinous mass, and finally dissolves to a homogeneous viscous solution. The cellulose is re-precipitated in flocculent masses on dilution with water, the precipitate retaining a large proportion of zinc oxide approximately in the proportion $2C_6H_{10}O_5 \cdot ZnO$.

By alcohol the compound is precipitated in a tenacious homogeneous form, *i.e.*, in films or threads, according to the method of bringing the liquids together.

We have often wondered why photographers have made no use of this solution. It certainly lends itself to the manipulations with which the craft is familiar, and appears to offer a method of preparing a suitable medium for carrying the photo-sensitive substance, whether on glass or paper. Certainly it should be found useful in investigations, and we commend the preparation to notice as affording a plastic modification of cellulose; one, moreover, which is easily obtained.

(*b*) Zinc chloride dissolved in hydrochloric acid.

A solution of the salt in twice its weight of the aqueous acid acts instantaneously on cellulose in the cold, and for many uses in research work has, therefore, important advantages over the preceding solvents.

Photographers may make some interesting demonstrations with this solution. If a platinum print be laid face downwards upon a resistant surface, *e.g.*, glass, porcelain, or asbestos, and the reagent poured upon the paper, the solution of the paper is accompanied by the appearance of the photograph in full detail. The effects are interesting, and as every chemical effect finds a practical application somewhere or other, we quite expect to see this solvent taken advantage of.

We have now described two solvents of cellulose, one a normal salt, a compound of a metallic oxide, and an acid in equivalent proportions; and one an acid solution of this salt. We have now to describe an alkaline solvent, a compound of a metallic oxide which may be regarded as having ‖ acid properties, with the alkali ammonia.

(*c*) Solutions of cuprammonium are prepared by adding precipitated copper oxide to strong aqueous ammonia. Crystallised copper sulphate is dissolved in water, and to the cold solution, caustic soda (solution) is added. The blue gelatinous precipitate of copper oxide (hydrated) is well washed on a cloth filter, squeezed and pressed, and stirred into strong aqueous ammonia.*

The solution should contain the reagent in the proportion: NH_3, 10–15 per cent., C_4O. 25–30 per cent.

The solution may be also prepared by placing scrap copper in contact with very strong ammonia and in presence of air. The metal is oxidised by the oxygen of the air, and the oxide dissolved by the ammonia.

This solution rapidly attacks cellulose in the cold and forms usually gelatinous or ropy liquids. The reaction has been largely used in the arts for treating cloths and paper, the treatment with the solvent followed by evaporation of the solvent on the fabric leaves the surface in a condition impervious to moisture. As far as we know there have been no applications of this solution or the reaction in photography. But we see certain possibilities of results, and we have therefore included it in our list of cellulose products.

These three solvents constitute a group: their action depends upon reactions of a not very definite order, speaking chemically. They may be broadly described as an interaction of acid and basic groups of the cellulose itself, reciprocally with basic and acid groups of the respective solvents: there results therefore in each case a species of soluble double salt.

We cannot here discuss the theoretical bearing of the reactions, and we must refer those who wish to follow them up to the special literature of the subject.

We now pass to methods of dissolving cellulose which depend upon well-defined reactions in which the cellulose is converted into derivatives or compounds belonging to well-known groups. These reactions are reactions of synthesis, and take place with those groups of the cellulose molecule the presence of which makes it an alcohol. The reactions of cellulose are, in fact, exclusively those which belong to the group of alcohols. Thus, if we write ordinary alcohol, the arch-fiend of the "blue-ribbon" philosophers, as $C_2H_5 \cdot OH$ we may write cellulose for the purpose of this discussion as $C_6H_9O \cdot (OH)_4$. It is the OH groups which are alcoholic.

We shall now describe one of the most characteristic of such compounds of cellulose, which occupies an intermediate position between the ill-defined compounds above described, and a group to be subsequently dealt with in conclusion. It is a compound soluble in water in all proportions, whereas in the latter group that of the acid ethers of cellulose, the relationship to water become negative. They are eminently water-resisting compounds. In respect of this property, therefore, the transition is maintained. Cellulose is attacked by solution of the caustic alkalies at a certain degree of concentration, *e.g.*, at and above a strength represented by 12 per cent., Na_2O on the solution: the effect on the fibrous celluloses is remarkable. They swell up, shrinking considerably in length and become translucent or transparent. The effects are due to the definite combination of the cellulose and alkali in the proportion: $C_6H_{10}O_5 : Na_2O$. We may express the compound "alkali cellulose" in the abbreviated form, $X{<}^{ONa}_{ONa}$. This compound in the presence of water reacts with carbon bisulphide in the cold. The molecules unite thus, $X{<}^{ONa}_{ONa} + CS_2$: the resulting sulpho-carbonate of cellulose may be written as $CS{<}^{OX \cdot ONa}_{SNa}$. The compound is perfectly soluble in water, and the solution is now employed on the large scale in several industries, being known as "Viscose." Its most important property is that of decomposing spontaneously on keeping, the cellulose being regenerated in compact coherent masses. The decomposition is more rapid at high temperatures.

Obtained as described, the solution has a yellow colour due to by-products of the reaction. The pure compound is obtained by treating the crude solution with a saturated solution of common salt or with alcohol. Both reagents precipitate the pure cellulose sulpho-carbonate. If the liquids are poured into the viscose the compound is precipitated in flocculent masses; but if the viscose be spread upon a glass plate and the whole submerged beneath the precipitating solution, the compound is obtained as a coherent film of a greenish colour.

We do not propose on this occasion to do more than demonstrate the main properties of the solution and of the new forms of structureless cellulose to which it gives rise.

We pass on to the third group of soluble and plastic compounds of cellulose, those formed by the reaction of the OH groups of

* See also *Ber. Deutsch. Chem. Ges.*, 13, 1822.

cellulose with negative or acid and radicals; these are the acid ethers or esters.

Of the possible esters of cellulose, the following have been investigated: the nitrates, acetates, benzoates, and sulphates.

Whereas, however, the first named take a prominent place in the industrial world, the three latter are known only to specialists. We need only briefly remind our audience of the chief uses of the nitrates of cellulose. They are two, and in strong contrast to one another. The higher nitrates of cellulose are the basis of the modern high explosives, the so-called smokeless powders and the like; the lower are employed as the basis of the many forms of transparent and opaque films employed in photography, of celluloid, xylonite, and other plastic materials of this group, also of the well-known collodion which played so important a part in the early days of photography, and still more recently as the basis of the new "artificial silk" industry. Avoiding the details of their applications we may say a few words on the more important chemical feature of these products.

Cellulose combines with nitric acid in several proportions. Writing the compound as $C_6H_7O_2\cdot(OH_3)$, each of the OH groups may be made to react with HNO_3 or nitric acid, each OH becoming in succession $O\cdot NO_2$, with a corresponding increase of weight of the resulting nitrate. What we wish to point out is that with the entrance of these highly negative or acid groups the physical properties of the parent molecule are not profoundly modified. The products are soluble in various liquids, *e.g.*, ether-alcohol, nitro-benzene, nitro-glycerin, which are without action on cellulose, but the properties of the compounds in solution are very much those of cellulose itself as seen in the solutions previously described. This could not be better illustrated than in the processes of spinning and preparing the "artificial silk." What is actually spun or drawn is a viscous collodion, the ether-alcohol solution of the intermediate nitrate. The resulting thread after elimination of the solvent is therefore the explosive compound or nitrate. But the nitric groups are easily removed by a chemical treatment. The yarn is treated with ammonium sulphide for this purpose, and there finally results a thread of pure cellulose, with very slight attendant change of physical properties. (See *J. Soc. Chem. Ind.*, June, 1896.) The cellulose is therefore taken through a cycle of chemical treatments without sensible change in properties, in order to take advantage (while in the intermediate stage of nitrate, and in this form soluble in suitable solvents) of the plastic and structural properties which are evidently those of the parent molecule.

The acetates stand next to the nitrates in order of technical interest. They are not easily prepared from the fibrous celluloses, but are obtained by simple reactions from the cellulose regenerated from solutions as sulpho-carbonates. These reactions are described in a paper which we communicated to the Chemical Society in 1895. (See *Journal*, p. 433.) The acetates are in physical properties similar to the nitrates. They are, however, non-explosive and withstand high temperatures, melting above 200° C. to a clear liquid. They are, in fact, as might be expected, extremely stable compounds, and in many respects, therefore, they are superior to the nitrates for industrial uses. We are taking steps to have them manufactured on the industrial scale, and hope very soon to be able to offer them to photographers.

It would be interesting, if only on theoretical grounds, to make comparative trials of the well-known but now relatively obsolete, collodion processes, with the acetates used in place of the nitrates. If any expert minded to undertake such investigations will communicate with us, we shall be able to put him in the way of obtaining supplies of the material. We shall not discuss the probable uses of these new products in detail, but content ourselves with a demonstration of their properties, and leave the matter in the hands of the specialists.

The benzoates again are compounds easily prepared from the more reactive celluloses obtained from the sulphocarbonate solutions. They have been even less investigated than the acetates. They have the same general properties and will no doubt in due course find their application.

These compounds will be found more fully described in our book on 'Cellulose' (Longmans, 1895). On this occasion we have merely to bring them together in a certain connection, *i.e.*, with the view of making photographers acquainted with the possibly useful forms of cellulose and its compounds. The annexed table sums up the results of this discussion, and gives a bird's eye view of these various products regarded, from the present practical point of view, as methods of bringing cellulose into solution.

Soluble Compounds of Cellulose.

A. By direct treatment with solvents: the cellulose in solution as a species of double salt: the solutions are aqueous.

1. Neutral. Zinc chloride.

2. Acid. Zinc chloride in hydrochloric acid.

3. Basic. Cuprammonium compounds.

B. Compounds previously prepared by synthetical reactions with alcoholic OH groups.

1. Sodium hydrate and carbon bisulphide. Synthesis of sulphocarbonate in two stages. Solutions aqueous and of course alkaline.

Acid esters of cellulose: compounds of "neutral" properties. Nitrates. Acetates. Benzoates. Soluble in: ether, alcohol, acetone, chloroform, glacial acetic acid, etc.

We now return for a few moments, in conclusion, to general considerations.

Cellulose as the colloid medium for the photo-sensitive substance has of late years given place largely to its rival gelatin. Gelatin is a substance differing radically in composition and constitution from cellulose: having however a fairly close resemblance to cellulose in physical properties, more especially in aqueous solution.

If we are to have positive knowledge of the actual function of the "medium" in the photographic system, it must be made the subject of definite scientific investigation. An important aid to investigation is the power to vary at will the several factors of a result. In cellulose, which includes, we may say, a number of natural products of different constitution, and in the groups of derivatives which may be formed from it, we have a substance which may be studied under a range of suitable variations. The purpose of this demonstration has been to suggest methods of manipulating various forms of the substance, the details of which will readily occur to those familiar with the technicalities of the art. Those who have not followed us from this point of view will, we hope, at least have got some fresh insight into a very attractive province of the chemistry of nature's raw materials.—*Photographic Journal.*

Benzacetin in Neuralgias.—Benzacetin has been tried in the treatment of various neuralgias, in the Lunatic Asylum of Stephansfeld. It is given combined with caffeine thus: benzacetin, 85·8 parts; caffeine, 8·5 parts, and citric acid, 5·7 parts. The dose of this mixture is 1 to 2 grammes, to be repeated in an hour if relief is not obtained. The general results of this treatment have been satisfactory, the pain being generally alleviated in from half to three hours, and not recurring for several days. It appears, however, that benzacetin does not exercise any direct hypnotic effect (*Therap. Monats*, x., 319).

THE ASSAY OF SACCHARIN.*

BY DR. R. SEIFERT.

The value of a commercial saccharin is regulated in the first place by the amount of true saccharin, absolutely pure sulfinide that it contains, and in the second by the amount of foreign substances in it. The intensity of the sweetness, the sweetening power, is due to the true saccharin present, whilst the purity of the sweetness depends on the presence or absence of bodies other than saccharin. These bodies other than saccharin consist of para-acid and other constituents which not only lack sweetness, but by their unpleasant taste influence unfavourably the pure sweetness of the saccharin. The more pure saccharin, absolute sulfinide, contained in a commercial saccharin, the greater will be the sweetening power. The less non-saccharin a commercial saccharin contains the purer will be its sweetness. The proportion of pure saccharin and of non-saccharin present in a commercial saccharin can be accurately determined by chemical analysis. It would, therefore, be most correct to ascertain the commercial value of a saccharin by determining the percentages of pure saccharin and of non-saccharin that it contains. The firm of Heyden have endeavoured to introduce this sound basis into the saccharin trade, but the value of saccharin is still ascertained in the usual way, that is, by stating its sweetening power. Saccharins are accordingly distinguished as of 270, 300, 450, and 500-fold sweetening power. These figures, 270 to 500, do not claim to be accurate; they are found by comparing the taste of a sugar solution with that of a saccharin solution, both being diluted until they are identical in sweetness or until they cease to be appreciably sweet. But as the sensitiveness of the gustatory nerves is very variable, and diminishes if sweet fluids are repeatedly tasted, the result is very unreliable and not nearly so accurate an indication of the actual value of a saccharin as the proportion of true saccharin and non-saccharin determined by chemical analysis.

In consequence of the impossibility of accurately ascertaining the sweetness of a saccharin by the taste, a sweetening power of 500 is taken in round numbers to represent that of an absolute sulfinide containing 100 per cent. of true saccharin and no non-saccharin; it is assumed that this pure sulfinide is 500 times as sweet as sugar. A 300-fold saccharin should accordingly contain 60 per cent. of true saccharin. According to Hefelmann's† determinations, Fahlberg, List, and Co.'s 300-fold saccharin contains 61 per cent., and Heyden's 300-fold as much as 68 per cent. of pure saccharin. The product is therefore much more than 300 times as sweet as sugar. That little reliance is to be placed upon the commercial designation "500 times sweeter than sugar" may be gathered from the following. Fahlberg's 500-fold saccharin was examined by Hefelmann,‡ and found to contain 91·5 per cent. of true saccharin, whereas, judging from its name, it should contain about 100 per cent. Foreign manufacturers have turned this contradiction between the usual commercial designation and the true sweetening power to account by vaunting a saccharin containing nearly 100 per cent. as 550 times sweeter than sugar. In point of fact, this designation would be justifiable if a 90 per cent. saccharin is to be termed 500-fold; but the term "saccharin of 550-fold sweetening power" is not warranted, as the sweetening power of 100 per cent. saccharin has already been assumed to be 500-fold; and as a commercial saccharin can never contain more than 100 per cent. of true saccharin, it can never have a higher sweetening power than 500.

The natural consequence of designating a saccharin as 550-fold is that the consumer prefers one product to another that may be equal or superior to it, and the procedure of foreign manufacturers will compel German manufacturers to assume a sweetening power of 550 (instead of 500) for 100 per cent. saccharin. As already observed, it is impossible to form by the taste a reliable opinion whether a saccharin is 500, or 525, or 550 times as sweet as sugar.

These foreign manufacturers also endeavour to create the impression that the foreign product is superior to the German, and with this object are distributing in circulars the following paragraph from a publication of Crato's:—

> "It is to be hoped that the German firms will soon succeed in raising the percentage of sulfinide in their products so that a minimum of 98 per cent. of saccharin may be demanded. Up to the present time the French product with approximately 98·6 per cent. of saccharin is the only one that fulfils this desideratum."

Hefelmann has already proved that this desideratum of Crato's was unnecessary, as saccharins of absolute purity, manufactured by the German firm Dr. F. von Heyden Nachfolger, are already in commerce.

The following quotation from Hefelmann's work will suffice: "Comparative analysis gave the following values."

	French saccharin 500-fold (now called 550-fold).	Absolute saccharin (Heyden).
Melting point.....	224°	224°
Percentage true saccharin	99°·75	99°·75

Saccharin precipitated from crystallose by dilute hydrochloric acid melted also at 224°.

The comparative analysis shows that French 500 (550) fold saccharin and Heyden's "sulfinidum absolutum" are to be regarded as exactly equal and chemically pure.

Hefelmann found crystallose to contain 77·59 per cent. of pure saccharin, melting at 224°. Assuming the figure 500 for 100 per cent. saccharin, crystallose will be represented by 400 (? 387). But if the figure 550 be taken for 100 per cent. saccharin, the sweetening value of saccharin would be represented by 425.

* Translated from the *Pharmaceutische Centralhalle*, xvi., 321.
† *Pharm. Centralh.*, 1894, 1895.
‡ *Pharm. Centralh.*, 1894.

THE SCHOOL OF PHARMACY.

SESSION 1896-97.

The fifty-fifth Session of the School of Pharmacy will commence on Monday, October 5, 1896. The prizes of the last Session will then be distributed by the President of the Pharmaceutical Society, Mr. Walter Hills, after which an Inaugural Address to the Students will be given by Mr. R. Brudenell Carter, F.R.C.S., Member of the General Medical Council and of the Pharmacopœia Committee of that Council.

The courses of study pursued in the School extend over a period of eighteen months. During the first course the student is expected to give his attention to the subjects included in the Schedule for the Minor or Qualifying examination of the Pharmaceutical Society, which was drawn up by the Board of Examiners in consultation with the professors of the School. The courses of lectures and laboratory instruction in each subject commence in October, and, with the exception of a short break at Christmas and Easter, are continued to the end of June. A student who works diligently during the course is expected to be ready to pass his Minor examination in July.

In the second course the instruction includes the subject-matter of the Schedule for the Major examination of the Pharmaceutical Society. Lectures and laboratory work in chemistry, physics, botany, and materia medica, commence in October, and are continued to the end of March. Students attending these courses are expected to be ready to pass the Major examination in April.

Students may enter the School at any time, but are strongly advised to do so in October. Applications for copies of the School Prospectus, which is now ready, should be made to Mr. Richard Bremridge, 17, Bloomsbury Square, London, W.C.

THE OLDEST CHEMIST'S SHOP IN ENGLAND.

VIEW OF THE HOUSE, AS IT NOW APPEARS.

In the market place of the interesting old town of Knaresborough there is a quaint building, possibly some 500 years old, which has been occupied as a chemist's shop since the year 1720. The present proprietor, Mr. W. P. Lawrence, a pharmaceutical chemist and member of the Pharmaceutical Society since 1884, has traced the history of the business back to the date above mentioned, when it was carried on by John Beckwith: after him came in succession John Coupland, Pullan, Gervais, John Acomb (one of the founders of the Society), and Charles Potter, the immediate predecessor of Mr. Lawrence.

The accompanying illustrations, representing the exterior of the house and the interior of the shop, recall the time when window glass was a much more costly material than at present, and when its use was further restricted by taxes. Some other relics of past times are less evident; thus, for instance, the making of mercurial ointment—a preparation much in demand in this agricultural district—was formerly carried out by the dogs, known as "turnspits," the pestle of the mortar being connected by a mechanical arrangement with the revolving cage, in which the dog was placed to provide the motive power. Again, nailed up against an inner doorway are two straps of leather, about a foot long, which were used down to within some fifty years, to hold quills filled with quicksilver, intended to be worn as charms or amulets against certain diseases, or to be placed under doors at night to keep away witches.

In the account of Samuel Glover, who had a druggist's business in the Briggate at Leeds about 1800, it is stated that he was previously in business in Knaresborough, but Mr. Lawrence has not been able to trace his name in the town's rate collecting books of that period, so that he does not appear to have been the occupant of a house there. However, the name Glover is scratched with a diamond upon one of the bedroom windows of Mr. Lawrence's house, so that it is just possible Glover may have been engaged there as an assistant.

VIEW OF INTERIOR OF SHOP, WITH COUNTER IN THE FOREGROUND.

PHARMACEUTICAL JOURNAL.

A Weekly Record of Pharmacy and Allied Sciences.

ESTABLISHED 1841.

Circulating in the United Kingdom, France, Germany, Austria, Italy, Russia, Switzerland, Canada, the United States, South America, India, Australasia, South Africa, etc.

Editorial Office: 17, BLOOMSBURY SQUARE, W.C.
Publishing and Advertising Office: 5, SERLE STREET, W.C.

LONDON: SATURDAY, AUGUST 15, 1896.

A QUESTION AS TO LEGAL WEIGHTS AND MEASURES.

An important point relating to the use of weights and measures was decided recently by Mr. Justice Day and Mr. Justice Lawrance in the case of Bellamy *v.* Pow—an appeal against the decision of the Somersetshire magistrates in a prosecution instituted under Section 24 of the Weights and Measures Act, 1878. That section of the Act provides that every person who uses, or has in his possession for use, for trade a weight or measure which is not of the denomination of some Board of Trade standard, shall be liable to a fine, etc. In the case referred to a retailer of spirits was found to have in his possession a pewter measure marked "$\frac{1}{3}$rd gill," used for the sale of spirits in threepennyworths. Among the standards mentioned in the Schedule to the Act and those supplied to the local inspectors of weights and measures there is none denominated one-third of a gill. Hence, on the assumption that one-third of a gill is not a legal measure and that the use of such a measure is an offence under the Act, a prosecution was instituted, which the Somerset justices dismissed. Their decision has been upheld by the Court of Queen's Bench in the appeal, on the following grounds stated by Mr. Justice Day in his judgment.

After expressing the opinion that the Statute in question is a beneficent one, passed with the intention of protecting persons who make purchases by weight or measure, and having for its principal object the checking of frauds on the public, Mr. Justice Day pointed out that in the case under consideration there was no charge of fraud. Though the vessel used and complained of was, in one sense, a measure, viz., one-third of a gill, it was not used to represent a measured quantity of spirits, but only that quantity which the publican considered to be threepennyworth. He was, in fact, not selling by measure or weight. In regard to the contention based on the fact that the measure was "not of the denomination of some Board of Trade standard," Mr. Justice Day referred to the rule that in the interpretation of penal provisions of a statute for the purpose of inflicting a penalty, an alleged offence must be clearly brought within the words of the section creating the offence, not by searching through other parts of the Act to find words enlarging the operation of the particular section. Though under the second schedule to the Weights and Measures Act it is provided that there shall be measures of a gill, a half gill, and a quarter gill, and there is not one of a third of a gill, the question as to the exact meaning of the words "denomination of some Board of Trade standard" might be a difficult one to decide. In regard to that question, Sir Edward Fry, the chairman of the Somerset magistrates, had pointed out in his judgment that since the gill is a denomination of one of the Board of Trade standards, it appeared to him that one-third of a gill, being a fraction of that particular denomination, should be regarded as a measure of a denomination of one of the Board of Trade standards. That was the view held by the magistrates acting with him in dismissing the information, as it seems to be clear that under the Statutes goods may be sold, not only by imperial measures, but by multiples or parts of imperial measures. The Court could not say that the magistrates were obviously wrong, and Mr. Justice Day added that if the matter had come before him in the first instance he would probably have decided in the same way.

The main reason for dismissing the appeal appears to have been consideration of the fact that the spirit was not actually sold as one-third of a gill, although that was the quantity sold as threepennyworth, the opinion was also expressed that if the measure used for the purpose had been marked 3*d.* instead of one-third gill no ground for complaint would have existed. At the same time, the view held by the magistrates was endorsed by the distinct statement that "if the spirit had been sold as one-third of a gill it would have been accurate," meaning presumably that the use of such a measure for trade purposes would not have been illegal. That appears, moreover, to be a conclusion necessarily following from the terms of the 19th Section of the Act, providing that in all sales, etc., "one of the imperial weights or measures" shall be used, or "some multiple or part thereof," the principle evidently being that weights and measures used in trade should bear definite relations to the respective legal weights and measures, and not such undefined or variable relations to them as would obtain in the use of heaped measure, for instance, or the various other local and customary measures which were made unlawful by the Act of 1878.

A further question arises, however, in regard to the verification and stamping of such weights or measures as may not coincide with the particular standards specified in the Schedule to the Act and supplied to the local inspectors for those purposes. Section 29 of the Act provides that "every measure and weight whatsoever" shall be verified and stamped; also that the use or possession of unstamped weights or measures shall render the owner liable to a fine. Section 44 provides that the local inspectors shall examine every measure or weight taken to him "which is of the same denomination as one of such standards" as they are provided with by the local authorities and deemed requisite for the purpose of comparison by way of verification or inspection in accordance with the Act. Some difficulty may be anticipated in this connection if it be held by the inspectors that a weight or measure is not legal unless it coincides with some particular denominational standard mentioned in the Schedule. In the case now referred to, the third of a gill might be regarded as an illegal measure that the inspector might refuse to verify and stamp. In view of the decision now given by the Court of Queen's Bench on that point there appears to be need for provision being made for such cases by the Board of Trade.

THE EXTENT OF PHARMACEUTICAL EDUCATION.

Probably the most momentous of the changes in the Pharmaceutical Society's educational arrangements decided upon at last week's meeting of the Council is that involved in the extension of the courses of instruction at the School of Pharmacy. Instead of encouraging students who enter the School in October to prepare for the Minor examination held six months later, and for the Major held three months after that, the whole session will henceforth be devoted to work for the qualifying examination only. That the advanced course should also be spread over a longer period is but natural, though this is a matter of slight importance as compared with the conditions for the sole legal qualification to practise pharmacy without restriction. It has for some time past been evident to everyone acquainted with the requirements of the present examination syllabus that such an extension of the period of study has become absolutely necessary if all suspicion of "cram" is to be avoided, and it is noteworthy that the same necessity has been felt by leading colleges in the United States.

This reversion to something like the older arrangements existing at Bloomsbury Square must be accepted as, to some extent, a confession of failure. And undoubtedly an opinion exists that the work of the School of Pharmacy has not been such an unqualified success in the immediate past as its numerous supporters could wish. As a model school much is expected of it, more, perhaps, than is quite justified in the absence of a compulsory curriculum. Still, it has been felt that, though its students may have been successful at the examinations in a much larger proportion than those of any other institution where pharmaceutical students are specially taught in this country, the proportion has not attained the limit it ought. For failure ought to be next to impossible to any student who has passed through the full course of instruction at the School. Just as a university undergraduate takes his degree almost as a matter of course, after passing the normal period at college, so ought a "Square" man to obtain the legal qualification without difficulty after passing through the School curriculum.

In the advanced course this ideal has been closely approached, the School of Pharmacy having always been pre-eminent in the training of pharmaceutical chemists. Unfortunately, however, the higher qualification offers too little temptation to students nowadays, and the prospect of maintaining the number of pharmaceutical students at even the present low level is none too promising. There is always the probability that, by inducing men to study longer for the Minor qualification, they may become more or less enamoured of the work and anxious to proceed further. But greater immediate benefit to the craft will come by gradually raising the standard of knowledge and skill for the legal qualification, thus compelling what is now optional, and the reorganisation of the School of Pharmacy may perhaps be regarded as tending in that direction. At any rate, it will fervently be hoped that, in the future, the number of its students who acquire the essential qualification may be as preponderating as the proportion now is for the higher qualification. The key-note struck by the change is that of advanced knowledge and higher culture for the average chemist and druggist, and not only for the pharmaceutical chemist. And thus, late and indirectly, we may perhaps expect to see realised the dream of the Founders of the Pharmaceutical Society—every registered pharmacist a master of his craft and consequently an individual of considerable importance in the social economy.

ANNOTATIONS.

"The Chief of the Druggists" is the latest title conferred upon Mr. Martindale by a leader-writer in the *National Observer*, who has evi lently been at his wits' end for a topic to enlarge upon. This genius, a Scotchman it is believed, finds that Mr. Martindale's address to the Conference embodied a complaint on the part of druggists that they are required to finish and check the work of physicians, and yet are not regarded as professional men. This is news, as is also the fact that "as to doses of poisons, there is a certain convention (*sic*) consisting in underlining, much as a Parliamentary whip is underlined, or in special initialling on the part of the prescribing physician. This is, as it were, a sign-post or danger signal to the pharmaceutical chemist who has to make up the prescription. His attention is particularly engaged to the fact that he is dealing with a poison, and must have his wits very particularly about him." And so the unfortunate writer flounders on, murdering his English whilst inventing facts, and wisely concluding by saying: "As to this disagreement (assumed to exist between doctors and druggists, Ed., *Ph. J.*) we hesitate, and indeed refuse to pronounce any opinion beyond this that Mr. Martindale is not a person who would write without full consideration and reason." Nor, it may be suggested, is the ex-President of the Conference likely to thank his friendly misinterpreter for belauding him with such frothy and nonsensical verbiage.

Presentation to Mr. Schacht.—An interesting ceremony will take place at Bristol on Wednesday next, when the local pharmacists intend to indicate their appreciation of Mr. G. F. Schacht's services on the Pharmaceutical Council, by presenting him with an illuminated address on the occasion of his retirement. Mr. Chas. Townsend, J.P. (late M.P. for Bristol North), has undertaken to make the presentation on behalf of the subscribers, and doubtless there will be a large attendance on the occasion.

Monument to Lavoisier.—The Paris correspondent of the *Daily News* says that the Emperor of Russia has subscribed 2000 roubles to the Lavoisier Monument International Fund, set on foot two years ago by the Academy of Science, at the instance of M. Berthelot. Nearly £2000 has now been collected, and it is hoped that a worthy monument will be ready for inauguration in May, 1900. Alsace has contributed about £100, Germany £160, England £130, and Austria-Hungary £100. The French Minister of Public Instruction will give £240, and the city of Paris £400.

Improvement in Telephony.—The blessings of science are necessarily discounted by complementary evils, compensation being the inevitable law of Nature. Restless man, however, must needs continually strive to minimise those evils, and at last a way appears open for the exit of the heretofore necessary "telephone young lady." For her extinction is inevitable if hopes based on trials of the Apostoloff Automatic Telephone prove well-founded. It is claimed for this system that it allows each subscriber to personally place himself in direct communication with any other subscriber of the same wire system in a city without the aid of an Exchange employé, and to converse with him at will. The system is worked by a single circuit, and it is stated that it can be adapted to all the existing telephone wire systems without any additional wires being necessitated between the central station and the subscriber, or any addition to the existing mechanism beyond a small attachment which exhibits automatically all service indications.

'The Indigenous Drugs of India,' a book written by Rai Bahadur Kanny Lall Dey, C.I.E., has become practically a new work in its second edition. In the compilation of this the author has been assisted by Mr. William Mair, late of the Royal Infirmary, Dundee, and now of Calcutta. Whilst they have endeavoured to bring the work into touch with the most recent advances and research in pharmacology, it is intended to some extent for general use in India as a guide to the use of indigenous medicaments, in cases where medical aid is not readily attainable. More than this, however, it should serve as a convenient manual of ready reference and as an introduction to such standard works as 'Pharmacographia Indica' and Watts' 'Dictionary of Economic Products of India.' The new edition is dedicated, with permission, to the Pharmaceutical Society of Great Britain, of which Kanny Lall Dey is an honorary member. In addition to the subject matter proper, a review of which will appear in the Journal at an early date, the contents include a prefatory memoir of the author-in-chief, a fine portrait of whom faces the title-page; an address on Indian pharmacology delivered by him before the Indian Medical Congress two years ago; tables of "British Indian equivalents"; appendices on *Aconitum napellus*, aconite collection in the Himalaya, *Ailanthus excelsa*, fluid extracts of Indian indigenous drugs and foods of India, and, finally, there is a classification in natural orders of the plants enumerated in the work, and also a good index. Occupying less than four hundred pages, this is the only modern work on indigenous Indian drugs which is published in handy form, yet it is designed by the authors to present all the essentials of the subject.

The Teaching University of London is yet in the dim and perhaps distant future, clerical opposition having prevented further steps being taken in the matter this session. The *Daily News*, commenting on the action of Lord Cranborne and Mr. Talbot, notes that those representatives of clerical bigotry in the House of Commons announced their intention of opposing the Bill unless the University of Grote and Mill were made sectarian. Mr. Disraeli, suggests the great Liberal daily, would have flung them a stinging epigram, and kept them up until they were sorry for themselves. Sir Michael Hicks-Beach would have told them to go to the place which they believe to have been designed for those who differ with them in opinion. Mr. Smith would have smiled and gone on as if nothing had happened. Mr. Balfour, however, with the weakness which is his least variable quality, at once surrendered to a faction which in the last Parliament was the butt of Mr. Hanbury and the laughing stock of Mr. Gibson Bowles. "As a result, the strongest Government of modern times allows Lord Cranborne to deprive London of a Teaching University." But there is little doubt that this is only a temporary check, and that the new University is bound to come,

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The Vaccination Commission has at last held its final meeting after sitting for more than seven years. The final report, which will be published shortly, is expected to be, on the whole, adverse to compulsory vaccination, and is not likely to afford much satisfaction in medical circles. It is understood that the Commissioners all approve of vaccination, with reservations, but unanimously recommend that the operation should not be insisted upon when parents declare their objection to it in writing. New methods of procedure are likely to be recommended by a majority of the Commissioners, such as the general use of calf lymph, and the transfer of vaccination business from Boards of Guardians to duly-constituted sanitary authorities. Finally, the minority on the Commission may be expected to wholly discountenance State or public interference with parents, as regards vaccination.

The Right to Trade Under One's own Name is more clearly defined by Mr. Justice North's strong decision in the Brinsmead case, and the attention of pharmacists who have wondered how far they would be legally justified in trading under patronymics which happened to have gained notoriety by the enterprise of others bearing the same name, may profitably be directed to this judgment. After hearing all the arguments Mr. Justice North said the evidence satisfied him that Thomas Edward Brinsmead and his two sons, with the assistance of others, had been committing a fraud from beginning to end; they had intended to establish a business by stealing as much as they could from that of the plaintiff firm—John Brinsmead and Sons. In October, 1894, Thomas E. Brinsmead and his two sons were working in the plaintiffs' employ, but they were afterwards dismissed for making and selling pianos on their own account. At the same time a man named Willcox was also dismissed irom the plaintiffs' employment. These four persons then commenced the business of pianoforte manufacturers, under the style of T. Brinsmead and Sons, and carried on business for about a year, starting with the nominal capital of £320. This was not like a case in which a particular name had been used in an honest manner, and under the circumstances he should grant an injunction restraining the defendants from using the name of "Brinsmead" in connection with the sale, manufacture, or hire of pianofortes, without the addition of an express statement that they were distinct from and had no connection with the old firm of John Brinsmead and Sons.

Carbolic Acid continues a favourite means of self-destruction, as witness recent cases in this neighbourhood, observes the *Liverpool Mercury*. There has been what one writer describes as an "epidemic" of suicides by means of this objectionable terminator of life's delights, in the Liverpool district, and our contemporary thinks "a measure of restriction of the sale of the deadly poison might easily be devised by either the Imperial or the local authorities, and chemists themselves, one is sure, would gladly welcome such an enactment." So think we all, but red tape and the bogey of "undue interference with trade" prevent such a simple solution of the problem. Meanwhile, however, it does seem that the Local Government Board might do worse than publish and distribute widely a printed sheet containing instructions how to commit suicide by poison in the quickest and easiest way. Carbolic acid is, at best, but a barbarous neutraliser of human sorrows, and its use for the purpose indicates decided lack of taste, whilst much unnecessary pain would be spared if the foregoing suggestion were adopted by a paternal Government.

Curiosities of the Tooth-brush.—In the *Dental Practitioner* Dr. Parmele notes that in some old books published during 1600, directions are given for preparing certain roots that are used to clean the teeth, lucerne and licorice roots being specified. These roots are directed to be boiled and cut into pieces six inches long, the ends of each being split with a penknife into the form of a little brush, after which the pieces are slowly dried to prevent splitting. In use, one end is moistened with water, dipped into tooth powder, and rubbed against the teeth until they look white. Brushes similar to these are said to be used at present in some parts of Turkey, but many Turks use ordinary European tooth-brushes, though as even the most lax among them look upon the pig and all belonging to it as vile and unclean, they would as soon think of eating a pork chop or a rasher of bacon as of defiling their mouths with a Russian bristle-brush. "The shopkeepers, therefore, swear by their heads and the souls of their fathers and mothers that the hair of which their brushes are made grew on the back of the camel, the cow, or the horse."

Money on the Decimal System.—A correspondent of the *Standard* observes with truth that it may surprise a great many to learn that the metric system, apart from bookkeeping, by no means generally prevails among the French people. After a hundred years of this system, the working and the lower middle classes still continue to buy their meat, bread, and groceries by the pound, their coal and coke by the bushel, their wine by the chopine and demisetier, while up to five francs they all of them reckon not by francs and centimes, but by sous, or halfpence. In the country they mentally judge of land by the arpent, and not by the hectare, and distance is still reckoned by the old league. He continues, "If my fellow-subjects are wise, they will stick to their own way of counting money. It may not be pretty, but it works well. What they suffer from the want of the metric system is nothing to what the French suffer from its adoption. Long years of residence in France enable me to speak with certainty in the matter. The French decimalists conceal the truth, and their English partisans do not know it." A special evil of the system is that its very universality causes inconvenience, for its prevalence in so many countries results in the illegal circulation of the money of each in all. Gold and silver pieces of a dozen countries circulate in France, and are palmed off on ignorant and unsuspecting tourists, who find that they cannot get rid of them again. Moreover, every shopkeeper is obliged to have suspended behind his counter a big sheet, a yard square, covered with many scores of engravings, representing the foreign coins he may receive and those he may not, because, though all the coins of the other countries in question are decimal, they are not all allowed to pass as good in France. It is urged that if the metric system were introduced into England, the necessity for this constant vigilance with regard to certain proscribed foreign pieces would be found just as intolerable to the English as it in reality is to the French, the truth being that the metric system, in its effect on currency, has made the giving and taking of money on the Continent a matter of perpetual worry to all concerned. The letter ends: "If my countrymen wish to bar the entrance into the United Kingdom of such an exasperating annoyance, they will assuredly never sanction the application of the metric system to their coinage."

Adulteration of Caraway "Seeds."—Attention having recently been directed to the adulteration of caraways with "drawn" fruits, Messrs. Dyer and Gilbrand (*Analyst*, xxi., 208) have reported on the matter to the Society of Public Analysts, discovering the somewhat obvious fact that the drawn "seeds" contain but little volatile oil; the authors found only 0·1 per cent. compared with 1·9 and 1·5 per cent. of volatile oil obtained by them from genuine Dutch "seeds." The latter figures, it should be noted, are abnormally low; Dutch seeds of fair quality should give over 5 per cent. of volatile oil. The "fixed ether extract" of the exhausted seeds was also found by the authors to be one-fifth less than that of the genuine fruits. The exhausted fruits, it may be noted, are much darker in colour than the genuine.

Ontario College of Pharmacy.—We have received a copy of the Calendar for the session 1896-1897. The College, which is now affiliated to the University of Toronto, affords every opportunity to students who desire to obtain a sound scientific and pharmaceutical training, whilst the fees appear to be very reasonable. Mr. Chas. F. Heebner is the Dean of the College, and professor of theory and practice of pharmacy; Dr. A. Y. Scott, professor of chemistry and botany; Dr. J. T. Fotheringham, professor of materia medica and pharmacognosy; whilst Professor Graham Chambers superintends the analytical and toxicological department.

British Trade in 1896.—The author of the series of articles entitled "Made in Germany," was well advised when he reprinted them in book form, for by the aid of Lord Rosebery's recent speech and the alarmist articles appearing in a number of respectable periodicals, he has been enabled to attract much more attention to his effusions than they seriously deserve. Because Great Britain no longer monopolises the world's trade it has been assumed that her commercial supremacy has already vanished, whilst the fact that Germany is advancing as a manufacturing and exporting country is interpreted as implying the loss of so much business by this country. Little or no attention is paid to the fact that the population of the world continues to increase, and that there is a consequent growth in the demand for manufactured articles. Statistics have, of course, been distorted to support the alarmist views referred to, but the truth of the matter appears to be that Great Britain continues to obtain much more than her fair share of the world's work, in spite of progress in Germany or elsewhere. Thus, the Board of Trade Returns just issued show that our exports for July last exceed those for July, 1895, by three-quarters of a million of money, whilst a comparison for the first seven months of the two years shows an increase in favour of 1896 of thirteen and three-quarter millions. Imports showed a decrease last month, but there is an increase in the aggregate imports for the past seven months of more than twelve million pounds sterling. German traders experience increasing difficulty in placing their goods in this country, and there is little doubt that when manufacturers have thoroughly learned the severe lesson taught by the mischievous working of the Merchandise Marks Act, they will prove the truth of the German opinion, formerly unquestioned that "when the English manufacturers take up the manufacture of any article and enter into competition, they will have the trade, and it is useless to compete with them."

Prejudice and Passion.—The *British Journal of Photography* is still rabid on the subject of scheduled poisons, for in a recent issue, in reply to a provincial photo-dealer, the editor says:—"No, you will be acting illegally if you sell solutions for intensifying negatives which contain either bichloride of mercury or cyanide of potassium. That trade union, the Pharmaceutical Society, will be down upon you for their penalty. It is only members of their body that the law allows such things to be vended by, although they, as a rule, know nothing of their uses or their properties." The writer of this nonsense is doubtless a young man, very smart as a photographer and even nice as an individual. He will not live to a green old age, however, if he gets so very cross at mere trifles, and persists in running his head against those extremely substantial barriers the Legislature has thought fit to erect, as a protection to the average individual against the indiscriminate distribution of dangerous poisons by irresponsible persons, who, perhaps, know less than "nothing of their uses or their properties."

Misuse of the Title "Chemist" is much too frequent, and local secretaries and other pharmacists do good service when they call public attention to such misuse in local newspapers. Attention is specially directed to this matter at the present time in consequence of the wrong association of the title with a particularly unsavoury divorce case, the co-respondent, Tudor Williams, of Aberdare, having been described in the Divorce Court as a "chemist." He possesses no legal right to that description, however, and thanks are due to Mr. John Munday, the local secretary for Cardiff, for his prompt action in publishing a disclaimer in the local press.

PARLIAMENTARY NOTES AND NEWS.

Weights and Measures.—The difficulty of pleasing everybody was exemplified by the deputation which waited upon the Board of Trade on Friday, 7th inst., to point out certain anomalies in the existing law relating to weights and measures. The deputation, which was said to be representative of inspectors and manufacturers of weights and measures—a curious combination—informed Mr. Ritchie that a state of chaos at present prevailed owing to the want of uniformity in the regulations of the various local authorities, and it was evidently feared that the legalisation of metric weights and measures might make the "confusion worse confounded." Mr. Ritchie, in reply, gave no hope of any amendment of the law in the near future, but said he would communicate with the local authorities with a view to attaining greater uniformity of administration. With regard to the legalisation of the metric system, Mr. Ritchie was commendably sound. He acknowledged being strongly impressed by the consideration that manufacturers were much hampered in their trade relations abroad by the existing state of the law, and he thought that such relations would be largely improved if those who desired to use metric weights and measures were allowed to do so. At present it was illegal to use such weights and measures, and the London County Council resolution to the effect that they would not punish offenders in this respect has caused the Rt. Hon. gentleman some astonishment.

Kew Admonished.—The name of Mr. Thiselton Dyer, one of Honorary Members of the Pharmaceutical Society and Director of the Royal Gardens, Kew, has been brought into some parliamentary prominence by the notice placed on the paper by Sir Robert Reid the other night. The ex-Solicitor-General asked whether the duty of preparing works on the African flora was entrusted to Mr. Dyer nearly twenty years ago, and if so, seeing that he had published practically nothing on the subject, the Government would urge that gentleman to either complete the work or abandon it, so that private enterprise in the same field might no longer be discouraged. Mr. Akers-Douglas, who replied, admitted that nothing had been published since the third volume of the 'Flora of Tropical Africa' in 1877, although there had been an understanding that an additional volume was to be issued every two years. Portions of one volume were, so the First Commissioner of Works assured the House, already in type, and Mr. Dyer had been urged to complete the work as rapidly as possible.

More Shop Bills.—There seems to be quite a mania for bringing in early closing measures this Session. The latest example is the Shops Bill, introduced and supported by Mr. John Burns, Sir Charles Dilke, Dr. Clark, Mr. Davitt, and Mr. Flower. As might be expected from such a collaboration, the provisions of the measure border on the humorous. All shops are to be closed (*a*) on one day at or before 1 p.m.; (*b*) on three other days at or before 7 p.m.; (*c*) on one other day at or before 9 p.m.; (*d*) on one other day at or before 10 p.m.; and (*e*) on Sunday entirely. Shops where medicines and medical appliances are sold are exempt, as are also the inevitable newsagent, tobacconist, etc., etc. Employers are generously permitted to employ their assistants for half an hour after closing time, and no doubt the following clause will be much appreciated when it can be understood:—

> "Any person may be employed in or about a shop during the three hours following the closing hour of the shop on not more than twenty days in any year, if the occupier of the shop has during December in the previous year served a notice on the inspector of the district specifying the days not exceeding forty on which he intends so to employ persons in or about the shop."

A £5 penalty is to be imposed for opening during prohibited hours, and in respect of each person employed during such prohibited time. Amongst other extraordinary provisions are those for compelling the employer to provide suitable sitting accommodation for his female assistants, to whom he must also grant "reasonable" intervals for using such accommodation, or be liable to a maximum penalty of £10. Meal hours are also fixed by this model Bill, and various other obstacles are suggested to discourage a person from employing labour. The Bill naturally will not advance to a second reading this session, but if it is introduced next session with the other two Bills on the same subject formulated by Sir J. Lubbock and Mr. Duncombe, there will be a busy time in the House, and assistants will be able to gauge the difference between friend Codlin and friend Short.

BRITISH MEDICAL ASSOCIATION MUSEUM.

A PHARMACIST'S IMPRESSIONS.

This exhibition, or museum as it is called, was held this year in the Drill Hall, Carlisle, a large room which is very suitable for the purpose, according well with the different arrangements. The varied appearance of the stalls, the moving about of visitors, the exhibitors calling the attention to the advantages of their special preparations, and the presence of ladies, gave to the hall a very picturesque, pleasing, and animated appearence, and the exhibition compared very favourably with its predecessors. Most of the leading firms were represented, especially those whose desire is to keep in close touch with those for whom they largely cater, and some of the exhibits were really very fine. I may mention Burroughs, Wellcome, and Co, Woolley, Sons, and Co., Duncan, Flockhart and Co., Oppenheimer and Co., Parke, Davis and Co., W. Martindale, Brady and Martin, Thos. Christy and Co., and Bleasdale and Co. Their exhibits represented the peculiar features of present-day pharmacy, with its compressed tablets, liquors, coated pills, capsules, bougies, concentrated mixtures, and specialties of all kinds, making dispensing easy for the medical profession. W. Martindale had a fine sample of hand-made pills, which looked as well as any of the coated ones. D., F. and Co. had a large show of chloroform, including samples of sp. gr. 1·490 (this contains 1 per cent. alcohol, which entirely prevents, under ordinary circumstances, decomposition). Oppenheimer showed a sample of eucaine, the new substitute for cocaine. W. Martindale also had a nice show of fine chemicals and effervescent preparations.

Christy and Co. exhibited cachet apparatus, new litmus pencils, thyroidin, tannigen, trional, etc. B., W. and Co.'s exhibit was very large and imposing, facing you as you entered the hall. They also had a collection of medicine chests that had been to various parts of the world and seen a lot of service, as also the one used by Stanley in Central Africa. Armour and Co. had a very fine exhibit.

Aërated waters and mineral waters were well represented by "Camwal," Hope and Bendle, of Carlisle, Apollinaris Co. with their new water, "Apenta," Condal Water Co., Hunyadi Janos, Ingram and Royle with Vichy and Carlsbad waters, and Gale and Kutnow's effervescent Carlsbad.

Surgical instruments were well to the front, and good displays were made by Allen and Hanburys, Brady and Martin, Weiss and Son, Medical Supply Association, of Edinburgh, Mayer and Meltzer, and Down Brothers.

Invalid foods were in great force, notably by Brand and Co., Van Abbot, Wyeth's Beef Juice, Liebig Co., Hovis Bread, Standard Malt Co., Maltine Co., Nutroa Food, Nestle's Food, Mellin's Food, Carnick's Peptonoids, Bovril Co., Condensed Milk, Sterilised Milks, Humanised Milk, Koumiss, Allen and Hanburys' Infant's Food, Liquor Carnis Co. with Virol, Marrol, etc.

Disinfectants were not neglected by the Sanitas Co., Allen and Hanburys with Izal and its preparations, Kuhn with Chinosol Antiseptic, Jeyes' Sanitary Compounds, Lawes' Chemical Co. Sanitary Preparations, and Bowden's Hygienic Antiseptic Soap, Medicated Wines by Hall and Glendinning. Medical literature was attended to by Cassell and Co., Rebman Publishing Co., and Pentland. Scientific Apparatus was looked after by Reynolds and Branson, Woolley, Sons, and Co., and Brady and Martin. Wood-wool preparations were exhibited by Hartmann. Cerebos Salt Company made a good exhibit of their specialty.

I think I have given a short account about all the exhibits that are connected with pharmacy, and the few remarks that I now conclude with are thoughts that have been engendered by the exhibition. This appeared to me to be a large shop, each exhibitor doing his best to bring the article or articles he deals in (specialties or whatever they may be) before the notice of the medical profession, for whom they are specially catering, their object being to sell to them or to get them to order them in their prescriptions (this specially refers to medicine). This is not, I think, generally of advantage to pharmacists, as a great many of the things can be equally as well made by the pharmacist, nor does it (with some notable exceptions) advance the art of pharmacy, as it appears to me to have a tendency to increase the evil that we have at present enough of, viz., the making of specialties. How this is to be met is a very hard nut to crack, but I beg to suggest that our Pharmacopœia be published more frequently than at present, and that in the interval we have an appendix appearing very frequently, so that formulæ for new medicines may, as soon as brought into practice, be introduced in it to be put on their trial (for approval or rejection by the compilers of the Pharmacopœia) as determined by their value.

NORTH-EAST LANCASHIRE CHEMISTS' ASSOCIATION.

ANNUAL MEETING.

The annual meeting of the above Association was held on Tuesday, July 28; present: Mr. Critchley, in the chair, Messrs. Howarth, Holt, Baxter, Holden, Grimshaw, Gifford, Pickup, Whitehead. The minutes of the previous annual meeting were confirmed. The balance-sheet, showing £6 13*s.* 6*d.* in favour of the Association, having been passed, the following officers were elected for the forthcoming year:—

President.....Mr. T. Critchley.
Vice-President .....Mr. W. Wells.
Treasurer .....Mr. W. Farnworth.
Secretary.....Mr. Whitehead.
Committee:—Messrs. Howarth, Gifford, Highton, and Holt.

A long discussion then arose regarding the sale of poisons—poisonous fly-papers in particular. The following resolution was passed:—

"That the Secretary inform all members of this Association that the sale of arsenical fly-papers must always be registered."

After a vote of thanks to the Chairman, the meeting closed at 10.40 p.m.

PHARMACEUTICAL SOCIETY OF IRELAND.

On Wednesday, the 5th inst., there was a meeting of the Council at 67, Lower Mount Street, Dublin, at 3 o'clock. There were present the Vice-President, Mr. Downs (in the chair), and Messrs. Hodgson, Kelly, Professor Tichborne, Whitla, Evans, Murray, Bernard, and Grindley.

The Vice-President said he was happy to inform them that the Society had succeeded in two summonses brought against Mr. W. S. Boyd, proprietor of the Liverpool and Belfast Tea House and Drug Store, 106 and 108, Cromac Street, and McAuley Street, Belfast, the one for unlawfully keeping open shop for the sale of poisons and the other for selling laudanum without being qualified to do so. The Bench inflicted on the defendant two penalties of £5 each, with costs.

Mr. Evans: Why was Mr. Boyd only fined?

The Vice-President: His partner is a qualified man.

A letter from the Privy Council Office intimated that the Lords Justices could not approve of the following regulation in reference to preliminary examinations, which the Council passed on October 2 last—that no examination in lieu of the Preliminary examination of the Society be in future accepted which does not contain all the subjects required for our Preliminary examination. This regulation is not to come into force until after April 1, 1896.

Vice-President: The only body that was hit by that regulation happened to be the Pharmaceutical Society of Great Britain, whose Preliminary examination is very elementary. They complain of it themselves, and it was considered unfair to those who passed our examination to have others admitted on an inferior examination.

Mr. Kelly: They would not receive our "Preliminary," whilst we receive theirs.

An enclosure from the Local Government Board contained a correspondence in reference to a contract for the supply of medicines to the Granard Union, which the Guardians had given to Mrs. Greer, a grocer, and of which the Council had complained. Mrs. Greer stated that the drugs she supplied were of the best quality, and were obtained from a "wholesale Dublin house."

Mr. Bernard said there was great dodging in connection with those poor law medicine contracts, and if he had copies of them he would be able to show that in no two cases were the prices the same.

Mr. Hodgson said the pricing in these contracts was managed in accordance with a system of manœuvring; for instance, calomel, of which very little was used, would be put down at 1*d.* a lb., whilst linseed meal, of which a great deal was required, would be put down at a very high price.

Mr. Evans: Have we any redress?

Vice-President: We have none.

On the motion of Mr. Evans, seconded by Mr. Murray, Mr. T. W. Robinson was re-elected Examiner in Practical Pharmacy.

Other business having been disposed of, the Council adjourned.

REVIEWS AND NOTICES OF BOOKS.

THE EXAMINATION OF POWDERED DRUGS.

Micrographie des Poudres Officinales. Par A. Herlant. Professeur à l'Université de Bruxelles. 40 Planches Photomicrographiques, par L. Herlant et G. Billen. Bruxelles: Henri Lamertin, 1896.

The importance to the pharmacist of the special subject with which this little work deals entitles it to a consideration that should be all the more careful in view of the somewhat novel manner of treating it advocated by Professor Herlant.

It is admitted on all sides that one of the principal duties of the pharmacist is to guarantee the quality of all drugs supplied by him to the public, whether they be chemical substances of definite composition or vegetable drugs, which are less easily obtainable of uniform quality. In his educational curriculum the large proportion of time devoted by the pharmacist to the study of analytical chemistry enables him to detect with ease the presence of minute amounts of impurity in substances of definite chemical composition, but with vegetable drugs the case is quite different. Many of these are prescribed in the form of powder, which the pharmacist is compelled to purchase, since the means at his disposal are inadequate for their preparation. Although it is at least equally important for him to be able to guarantee the purity of these as he guarantees that of his chemicals, yet, in this country at least, the average pharmacist is not only incapable of controlling their purity, but even of establishing their identity except by the rough and ready tests of odour, taste, and appearance. This reproach does not apply in the same degree to the pharmacists of the Continent. There the study of the minute anatomical details of vegetable substances destined to be used in the form of powder, either as foods or drugs, has occupied the attention of a succession of eminent histologists.

By painstaking and laborious work, by cutting sections in different planes, by separating tissues and cells by various means, by studying their development and examining their contents, the minute anatomy of foods and vegetable drugs is becoming daily more and more accurately known. The examination of such substances after they have been powdered has shown that many cells and even tissues suffer so little damage during the process that they are still recognisable in the powder, and further, that certain tissues are frequently found associated with others in a manner that is characteristic. Comparison of one powder with another has proved the possibility of distinguishing them when separate, of recognising each when they are mixed, or even of detecting the presence of any substance foreign to the drug under investigation. Though many cell-forms may be and are common to the drugs of one class, yet comparative examination has shown that, at least in the great majority of cases, there are certain tissues, cells, or cell-contents that allow of each member of that class being distinguished from all others. Such results of patient work have been recorded in descriptions accompanied by illustrations, in which special attention has been devoted to such diagnostic characters, whilst those features that are common to all the members of the class have been kept more or less in the background. These particular diagnostic characters have thus been intentionally rendered more prominent than they really are in the powder itself, and this is both desirable and even necessary, for the illustrations are intended to present such characters, often minute, to the eye and brain of one to whom they may be assumed to be as yet unknown, and who consequently has some difficulty in perceiving them. Moreover, such illustrations differ intentionally and necessarily from the actual preparations

because they exhibit collected together in one illustration characteristic cells or substances seldom found in the field of the microscope at one and the same time, objects for which search has frequently to be made through the whole preparation, or even through several slides, a search that must often be facilitated by the removal from the preparation of substances, such, for instance, as starch, by which diagnostic details may be obscured.

Professor Herlant views the subject in a different light. To the accentuation of the diagnostic characters and the comparative suppression of such as are, in this respect, valueless, he objects, on the ground that this method, whilst impressing the principal elements on a pupil's mind, is of little use in the identification of a microscopical preparation. "Everyone," says Professor Herlant, "who has had to identify a vegetable powder under the microscope, knows how difficult it is to arrive at a result by consulting the numerous plates that adorn the majority of treatises on micrography." In 1894 he proposed to record in a collection of photographs the microscopical characters of organised alimentary substances, and thinks now that a similar collection for drugs will be of undoubted utility. "Photo-micrography," says Professor Herlant, "has the immense advantage of reproducing the preparation just as it is, often with its imperfections—bubbles of air, fragments too large to be defined, etc." Admitting that those not accustomed to use the microscope and acquainted only with drawings may find the plates often confused and inelegant, he thinks that workers conversant with the use of the microscope will be glad to find faithfully reproduced the preparations they are accustomed to study.

Before examining the body of the work, Professor Herlant's objection to the usual method of illustrating powders—an objection that is, in point of fact, the *raison d'être* of the work—may be fairly contested. The principal elements impressed on the pupil's mind by the illustrations Professor Herlant condemns are exactly those by which the powder is to be recognised, as indeed Professor Herlant himself, in the first paragraph of his preface, admits. An expert microscopist, examining an unknown powder, will perceive and record by a sketch elements that his experience will have taught him are probably characteristic, such, possibly, as hairs, epidermal cells, stomata, crystals, and so on. Thus he accumulates a collection of typical elements which he compares with similar collections presented in the illustrations. Having selected one or more than one drug as possibly identical with his powder he proceeds to compare his sample with powders of these drugs known to be genuine. By this means alone can the identification be rendered complete. And if the individual conducting such an examination be not an experienced microscopist, then he had better abandon the attempt until by patient study he has rendered himself fit for the task, for he can have as little hope of succeeding as a tyro would have of successfully conducting a complicated chemical analysis.

Turning now to the micro-photographs, of which, with a few lines of description for each, the work consists, it must be frankly admitted that they are often "confused and inelegant." The expert will, however, disregard this, and, examining them critically, will endeavour to ascertain whether they facilitate the recognition of a powdered drug and are in this respect superior to illustrations already published.

The answer must unfortunately be decidedly and unhesitatingly in the negative. In very few instances only would it be possible to identify the illustrations with the powdered drugs, and they are, one and all, far inferior to the well-known illustrations in works already in existence. Powdered jalap, for instance, so easily recognisable under the microscope, is represented by five large dabs and several smaller ones, in none of which can a trace of detail be distinguished. Even the most experienced histologist would be puzzled to identify althæa root, cinnamon, cassia, rhubarb, senna argel, and many others. The hairs of nux vomica, that are so characteristic and have so often been faithfully reproduced, are unrecognisable; and the same is true of the starch grains in all the plates, except perhaps that of ipecacuanha, under a magnification of 220 diameters. Orris root is saved by a large prism of calcium oxalate, and digitalis by the faint outline of a hair. The illustration of powdered althæa leaves may be said to consist of a photograph of two stellate hairs; such hairs are, however, not confined to the leaves of *Althæa officinalis*. Nor is it possible to agree with Professor Herlant in finding in "bubbles of air and fragments too large to be defined" objects that may be advantageously included in illustrations of powdered drugs; indeed the presence of large particles in the preparation must be regarded as distinctly objectionable.

With these few instances enough has been said to show that this work, on which evidently both time and trouble have been spent, fails to accomplish its object. The origin of the failure is not far to seek; it lies in the method selected for reproducing the microscopical preparations, viz., photo-micrography. In the first place, to yield a successful photo-micrograph the object must be so thin and so flat that, under the magnifying power necessary to show the required detail, all points in the preparation shall be in focus at one and the same moment. Even with the thinnest sections this is seldom the case; with powdered drugs the condition still more rarely obtains on account of the size of particles of tissue, and even of starch grains when magnified to the requisite degree. The expert microscopist, by constantly altering the focus, avoids this inconvenience, and in the illustrations drawn by hand details distinctly visible only by constant change of focus are represented as being seen at one and the same moment. But with photo-micrography this is impossible, and though some points may be in focus and be accurately reproduced, others are out of focus, and therefore blurring is produced and detail is lost. This is the case with the plates in question, even though the magnification has been so low (75 diameters) as not even to show the necessary detail. To this possibly is due the fact that, in the plates of powdered leaves, the hairs which have been in focus are sometimes distinctly shown, but the stomata, epidermal cells and crystals are in no case discernible. In the second place photo-micrography does not allow of typical elements distributed over several fields being collected in one illustration. To show, therefore, the several characteristic elements present in most powdered drugs as many photo-micrographs would have to be prepared as there are such elements, each of which would consequently be reproduced in a separate illustration. Assuming, for the sake of argument, that improvement in the process of photo-micrography may render the satisfactory reproduction of such elements, one by one, possible, this method of illustration would be most inconvenient. There are, therefore, at least two well-founded reasons for adhering to the method of illustrating microscopical preparations that has already yielded such admirable results. A minutely careful inspection of Professor Herlant's work warrants the conclusion that at present, at least, in his hands and those of his collaborateurs, photo-micrography is for the purpose for which it is recommended an eminently unsuitable process.

Sugar in Local Treatment of Carbuncle.—Dr. T. Richardson advocates the local application of "foots" sugar spread over the surface of a hot linseed poultice, and repeated several times a day, in the treatment of carbuncle. He has successfully treated several cases in this manner, and has not needed to have recourse to any cutting operation (*B. M. J.*, 1/96, 210).

IRISH NEWS.

The Mullingar Medicine Scandal.—The Local Government Board having considered the evidence given at the recent sworn inquiry, held at Mullingar by the Medical Inspector, Dr. Stafford, regarding the medicine contract to the Mullingar Union, announced its decision at the meeting of the Poor Law Guardians, held on Thursday, last week. The points inquired into were as follows:—(1) Why the tender of a local pharmacist was accepted without even opening the envelopes containing tenders from kindred traders; (2) the loss resulting from the Guardians' action in the matter; and (3) the failure of the medicine contractor to supply drugs upon the authorised list at the current wholesale price in accordance with the terms of his contract. The Local Government Board having carefully considered all the facts of the case, and having regard to the gross system of overcharging which has been practised, has come to the conclusion that Messrs. English ought not any longer to be entrusted with the supply of medicines. The Guardians will terminate their employment and re-advertise for a tender for the supply of drugs to the Union. The Board seriously admonishes the Clerk of the Union for his failure to check the list of drugs supplied with a wholesale price list. On the decision being made known the Clerk said he was guiltless of neglect of duty in the matter. He only followed custom. The Guardians decided to postpone the consideration of the matter for a fortnight, and to summon a full meeting of the Guardians.

Apothecaries' Hall of Ireland.—At the annual meeting of the Governors and Council of the Apothecaries' Hall of Ireland, Mary Street, Dublin, convened by the Statute of Incorporation, on the 1st inst., the following gentlemen were duly elected by ballot to serve as office-bearers during the ensuing year:—Governor, Sir Robert Jackson; Deputy Governor, J. Raverty Bray; Directors, H. Auchenleck, W. V. Furlong, John Evans, Robert Montgomery, M.A., M.B., Robert Montgomery, M.R.C.S., Charles J. Moore, L. Lucas, R. J. O'Flaherty, Sir J. Owens, J.P., J. A. Stritch, J. Shaw, C. R. C. Tichborne. The last named was also elected representative on the General Medical Council and Consulting Chemist. Dr. Montgomery, M.R.C.S., was appointed Secretary. After transacting some items of business, the court adjourned till the last Friday in September.

Dr. Corry's Library.—The library of the late Dr. F. C. S. Corry, proprietor of the Victoria Medical Hall, Belfast, whose death was reported a short time ago, was last week disposed of by public auction. The collection, which numbered some 10,000 volumes, embraced the best standard works extant, all of which went to the hammer at good prices in 1680 lots. The sale was largely attended each day.

New Pharmacies.—Mr. John Robson, L.P.S.I., has left Kells, and opened a pharmacy in Mountrath, Queen's County. Mr Martin R. Nugent, L.P.S.I., of Limerick, has gone to Croom, Co. Limerick, where he has opened a pharmacy. He has also been appointed Apothecary to the Croom Union.

Prosecution Under the Pharmacy Act in Belfast.—A judgment, in which a great deal of interest was manifested, has been delivered at the Belfast Police Court, in a case which was recently heard. The presiding magistrates were Mr. John Burke, J.P., and Mr. R. J. Hilton, J.P. Two summonses were brought against Mr. Wm. S. Boyd, proprietor of the Liverpool and Belfast Tea House and Drug Stores, 106 and 108, Cromac Street and McAuley Street—one summons being for the defendant keeping "open shop" on April 10 last for the retailing and dispensing of poisons, he not being properly qualified to do so; and the second summons was for selling and retailing laudanum. The Pharmaceutical Society of Ireland was the complainant. The Chairman (Mr. Burke), in the course of the judgment, said the first charges in the summonses were proved, and the defendant, Wm. S. Boyd, must therefore be ordered to pay a penalty of £5 and costs of court for each offence, the penalties to be allocated as provided under clause 36 of the principal Act.

NOTES AND FORMULÆ.

Alkaloidal Valuation of Ergot.

Beckurts employs 25 grammes of the powdered ergot which is first deprived of its oil with petroleum spirit; it is then shaken with 100 grammes of ether and 1 gramme of magnesia previously suspended in 20 C.c. of water. Sixty grammes of the ethereal solution is then freed from alkaloid with frequent washings with 0·5 per cent. hydrochloric acid, from which the alkaloid is then removed by ammonia and ether; this ether washing on evaporation leaves the alkaloid as a yellowish-white crystalline residue. Russian and Austrian ergots proved to be the best, containing 0·2 per cent. of alkaloid; German yielded 0·15 per cent., and Spanish 0·14 per cent. Drying by artificial heat diminished the amount of alkaloid by about 10 per cent. (*Journ. Soc. Chem. Ind.*, xv., 223, after *Oesterr. Zeits.*).

Reactions for the Presence of Formalin in Milk.

Richmond and Boseley modify Hehner's sulphuric acid test as follows:—A small portion of the milk is diluted with an equal volume of water and strong sulphuric acid of 90 to 94 per cent. cautiously added. If free from formalin a greenish tint is given at the line of separation and a brownish-red colour develops after some hours, not at the juncture of the liquids but lower down in the acid; if formalin be present, however, a violet ring is formed. Hehner also finds that by adding to a portion of the distillate from 100 C.c. of milk one drop of a dilute aqueous solution of phenol, and pouring the mixture on to strong sulphuric acid, a bright crimson colour is produced at the zone of contact (*Analyst*, xxi., 93, 95).

Fertilising Mixtures.

For Gardens.—Ammonium sulphate, 10; sodium nitrate, 15; ammonium phosphate, 30; potassium nitrate, 45 parts.

For Lawns.—Potassium nitrate, sodium nitrate, calcium sulphate, and calcium superphosphate, equal parts.

For Fruit Trees.—Potassium chloride, 10 parts; potassium nitrate, 50 parts; potassium phosphate, 57 parts (*Rev. Chim. Ind.*).

Chemical Guano.

Calcium nitrate, 100; potassium nitrate, 25; potassium phosphate, 25; magnesium phosphate, 25 parts. Dissolve a teaspoonful in a quart of water and apply to each pot once or twice a month. The plants must be in full vegetation (*Canad. Pharm. Journ.*, after *Rev. Hort.*).

Horse-Chestnut as an Emulsifier.

Durand suggests the use of powdered horse-chestnuts for the emulsifying of heavy tar oils, tar, oil of cade, and other empyreumatic or hydrocarbon bodies. Fifty parts of powdered horse-chestnut are introduced into a capacious vessel, and sufficient water is then added to produce 100 parts of liquid. To this is added 900 parts of tar oil or other body and the whole well shaken; a perfect emulsion immediately results, and after repeated agitation it remains permanent. This method of emulsification should be useful for the preparation of veterinary liniments (*Journ. de Pharm.* [6], iii., 395).

Glycerophosphate of Lithium.

The glycerophosphate of lithium, in the form of a white crystalline powder or in a 50 per cent. solution, is given in doses of one half to one gramme several times a day in aerated water, in those cases in which the tonic effects of glycerophosphates and the uric acid solvent action of lithia are indicated (*Nouv. Rem.*, xii., 205, after *Merck's Bull.*).

NEW REMEDIES.

[*The notes given under this heading embody recent suggestions in therapeutics. They cover both new drugs and preparations, and old ones under new aspects. The word "parts" is used to represent parts by weight, both for solids and liquids.*]

Malakin as an Anthelmintic.—Although hitherto used solely as an antithermic and antirheumatic, Ottolenghi considers, as the result of his experiments on dogs, that malakin possesses marked anthelmintic and vermifuge properties (*Rev. de Thérap. Méd. Chirurg.*, lxiii., 57).

Glycerin in Hepatic Colic.—As a substitute for large doses of olive oil, which although often efficacious, are extremely nauseous to take, and frequently cause vomiting, Ferreira, following the suggestion of Bertrand, has employed glycerin, in doses of 20 to 30 grammes, and finds it in every respect as useful as the oil, and at the same time readily taken (*Bull. Gén. de Thérap., Sec. Pharm.*, I., 251).

Copper Arseniate in Typhoid.—Aulde has for some years employed arseniate of copper for the purpose of intestinal disinfection in typhoid. For a medium dose he gives six-tenths of a milligramme of copper arseniate every four or six hours, if the disease is in an early stage of development; if, however, the patient is above seven years of age, a milligramme of the arseniate may be injected hypodermically night and morning. To obviate the diminution of leucocytes, which is observed in typhoid, the author injects twice daily a Pravaz syringeful of 25 per cent. aqueous solution of nuclein (*Rev. de Thérap. Méd. Chirurg.*, lxiii., 79, after *Therap. Woch.*).

Narcotine in Malaria.—Pure narcotine, 2; dilute sulphuric acid, 8; distilled water, 180 parts. A tablespoonful every two hours in cases of malarial fever (*Rev. de Thérap.*, lxiii., 383).

Airol in Treatment of Corneal Ulcer.—Having first applied a weak solution of cocaine to the eye, Gallemaerts finds that airol may be used with the best results in the treatment of corneal ulcer, the powder being applied directly to the cleansed ulcerating surface by means of a pledget of wool or badger's-hair pencil. Rapid healing takes place with the use of airol (*Répert.* [3], vii., 307, after *Policlin. de Brux.*).

Menthol in Coryza.—A 5 or 10 per cent. solution of menthol in chloroform forms a convenient inhalation in coryza. A few drops are placed on the handkerchief and five or six deep inspirations taken (*Thérap. Gaz.* [3], xii., 402, after *Journ. de Méd. de Paris*).

Dilute Solution of Perchloride of Mercury for Toothache.—At a recent meeting of the Société de Thérapeutique, Bardel stated that the local application of one part of Van Swieten's solution (corrosive sublimate, 1; water, 1000) and four parts of boiled water would relieve the most violent toothache. The solution should be gargled two or three times for a few minutes, keeping the liquid in contact with the diseased tooth (*Med. Press*, new ser., lxi., 657).

Eucaine in Dentistry.—Eucaine has been employed in 128 extractions by Wolff of Berlin, (*Therapist*, vi., 59), with perfect success. At first he used 1½ Pravaz syringeful, but finally found that 5 minims of a 10 per cent. solution was sufficient, as the larger dose may give rise to swelling of the gums. In two cases only were slight attacks of vertigo noticed, and these were so slight as to be negligible. The author prefers to inject small doses of 3 to 5 minims at each root rather than a larger quantity for a series of teeth.

Bromoform in Whooping Cough.—The following emulsive vehicle is recommended by Marfan for the exhibition of bromoform to children. Bromoform, 48 drops; oil of sweet almonds, 20 grammes; gum tragacanth, 2 grammes; gum acacia, 4 grammes; cherry laurel water, 4 grammes. Water to make 120 C.c. Mix the bromoform with the oil, then add the other ingredients. A teaspoonful of this mixture contains two drops of bromoform (*Bull. Gén. de Thérap.*, cxxx., 524, after *Rev. Mens. des Mals. de l'Enf.*).

CORRESPONDENCE.

All Articles, Letters, Notices, and Reports intended for publication in the Journal, Books for Review, and communications respecting Editorial matters generally must be Addressed "Editor, 17, Bloomsbury Square, London," and not in any case to individuals supposed to be connected with the Editorial Staff. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

Any Instructions from Members, Associates, and Students of the Pharmaceutical Society, with reference to the transmission of the Journal, should be sent to the Secretary — Mr. Richard Bremridge,— 17, Bloomsbury Square, London.

Business communications—including advertisements, orders for copies of the Journal, and instructions from Subscribers respecting transmission of same—must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London. Cheques and money orders should be made payable to "Street Brothers."

Correspondents who wish notice to be taken of their communications must write in ink, on one side of the paper only, and should authenticate the matter sent with their names and addresses—of course not necessarily for publication. No notice can be taken of anonymous communications.

Drawings for illustrations should be executed twice the desired size; clean, sharp lines being drawn with a pen and liquid Chinese ink. Shading by washes is inadmissible. Photographs can be utilised in certain cases.

Names and Formulæ should be written with extra care, all systematic names of plants and animals being underlined, and capital letters used to commence generic but not specific names.

Reprints of articles cannot be supplied unless authors communicate with the Editor before publication.

Retail Price-Lists.

Sir,—In reply to "An Old No. 5," *re* Liverpool chemist's price-list, the tenth edition, issued last year, was subjected to a thorough revision, and, I think, brought well up to date. That edition having been sold out, the list has again been carefully gone over, several necessary alterations made, and we have in the press a smaller new edition. Perhaps it will not be out of place for me to point out several items bearing on the revision. First, the prices are not intended for trade or photographic purposes; second, the best quality only is intended; third, though it is well known that many chemists, through situation or store competition, are unable to obtain the list prices, there are many others who can and do obtain them for dispensing and ordinary retail. And in charging those prices, which for responsible work we think reasonable, they are doing a distinct service to the trade generally, as they show to the public that experienced service, well rendered, demands and deserves its proper remuneration. Where confidence exists between patient and dispenser, the former is generally prepared to pay the latter a fair price for his services, for both dispensing and retailing medicines. Finally, it is left to all of us to beget this confidence by exercising care and integrity in conducting our business, and so obtaining that fair remuneration for our services which the Liverpool list aims at.

Liverpool, August 5, 1896. T. S. Wokes,
Chairman of Revision Committee.

PUBLICATIONS RECEIVED.

Our Baby, for Mothers and Nurses. By Mrs. Langton Hewer. Fourth edition: revised. Pp. 140. Price 1*s.* 6*d.* London: Simpkin, Marshall, Hamilton, Kent, and Co., Ltd. 1896. From the Publishers.

Food in Health and Disease. By J. Burney Yeo, M.D., F.R.C.P. New and revised edition, Pp. 592. Price 10*s.* 6*d.* London: Cassell and Company, Ltd. 1896. From the Publishers.

Commercial Organic Analysis. By Alfred H. Allen. Second edition. Volume iii., part iii. Second edition. Pp. 508. Price 16*s.* London: J. and A. Churchill, 7, Great Marlborough Street. 1896. From the Publishers.

The Indigenous Drugs of India. Short Descriptive Notices of the Principal Medicinal Products Met with in British India. By Kanny Lall Dey, Rai Bahadur, C.I.E., F.C.S., assisted by William Mair. Pp. 387. Second Edition. Revised. Calcutta: Thacker, Spink and Co. London: W. Thacker and Co., 87, Newgate Street, E.C. 1896. From the Publishers.

ANSWERS TO QUERIES.

[*Queries addressed to the "Editorial Department, 17, Bloomsbury Square, W.C.," will be replied to in the Journal as early as possible after receipt, but the Editor cannot undertake to reply to them through the post, nor is it always possible to publish answers the same week. Questions on different subjects should be written on separate slips of paper, each of which should bear the sender's name or initials. Readers requiring working formulæ for special preparations, and intimating their wants to the Editor, will be assisted as far as may be practicable. The word "parts," when used in formulæ, invariably indicates parts by weight.*]

H. H. Sturch.—We are making enquiries for you.

"Pharmakos."—They are specimens of *Erysimum cheiranthoides*.

"F. H. P."; A. Lander; D. Dickenson.—The determinations of your specimens will appear next week.

"M. J."—Apply to the secretary of the Royal College of Veterinary Surgeons, 10, Red Lion Square, W.C., for the information you require.

E. S. Cardell.—We have no knowledge of the composition of the preparation you name, and can only suggest that it be submitted to analysis.

"Spatula."—The lively little 'Spatula' is published monthly, at 8, Oliver Street, Boston, Mass., U.S.A., and the annual subscription is 50 cents only. Nothing better of its kind is to be had.

Removing Superfluous Hair.—If you find ordinary depilatories of no use, the only thing to be done is to have the case treated by electro-cautery. This is said to be not very painful, but it is somewhat tedious, as the root of each individual hair has to be operated on. It should, of course, only be done under the supervision of a qualified surgeon. [*Reply to* Quæsto.]

Explosion of Glass Mortar.—The sudden disruption of glass mortars whilst effecting the solution of solid matters by their aid is not uncommon, and appears to be due to some molecular disturbance in the glass. The longer the mortar has been used for the purpose the more likely is such an accident to happen, and the moral is—replace glass mortars by others of more suitable material. [*Reply to* "Veritas."]

Liability for Overdose.—This would depend entirely upon the circumstances of the case. The prescriber alone might be adjudged liable if the dispenser could prove that he had good reason to believe the large dose was ordered intentionally, and that he had taken all possible precautions; or again, prescriber and dispenser might be found jointly liable. An important point to be decided first would be—What constitutes an overdose? [*Reply to* "Cymro."]

Work on Analysis.—Muter's 'Short Manual of Analytical Chemistry' (Simpkin, Marshall and Co., 6/6) is the handiest laboratory companion for pharmacists, and you may supplement this when necessary by reference to Fresenius' 'Qualitative Chemical Analysis' (Churchill, 15/-), Thorpe's 'Quantitative Analysis' (Longmans, 4/6), and Sutton's 'Volumetric Analysis' (Churchill, 17/6). Any of these will be sent to you by the Librarian on application. [*Reply to* "A Member."]

Ol. Rhodii.—This is generally known to be factitious, and it is doubtful if any "wholesale house" would pretend to sell you the genuine article, which has become obsolete, and is never now met with in commerce. The genuine oil is distilled from the wood of the canary rosewood, *Genista canariensis*. What is sold as oil of rhodium is generally a solution of otto of rose in copaiba oil, not copaiba balsam as you state. One drachm of otto in a fluid ounce of copaiba oil will give you a very strong, so-called "rhodium oil." [*Reply to* F. B.]

Infants' and Invalids' Food.—Biscuit powder, 1½ lb.; baked wheat flour, 1 lb.; finest ground oatmeal, 6 ozs.; milk sugar, 6 ozs.; powdered malt, 8 ozs. Dry at a low temperature and mix. If you intend to make it on a large scale, you should have wheat flour and fine oatmeal mixed with milk by a baker and baked in the biscuit; then ground up with the powdered malt. For invalids a similar basis, with the addition of a fourth part of lentil flour and an eighth of locust bean powder is beneficial. The malt should not be cooked, but added to the baked "biscuit" while grinding. [*Reply to* H. D. A.]

Choice of a Microscope.—You cannot do wrong in purchasing an instrument by Leitz, whose lenses in particular are exceptionally good at the price. The question is, however, whether you would not do better to invest a little more money in the stand. A satisfactory rack-work coarse adjustment is always an advantage, and the stand selected should be capable of receiving a suitable substage condenser with iris diaphragm. See also that there are both plane and concave mirrors. A plain stage is the best for work, and there is no disadvantage for practical purposes in having a non-inclinable stand unless you wish to do much at photo-micrography. [*Reply to* A. Allan.]

Dispensing Query.—In the prescription—

℞	Potass. Acid. Tart	gr. xxii.
	Magnes. Sulph	℥ iss.
	Syrupi Eastonii	℥ iss.
	Aq. Chloroformi	ad ℥ xii.

there is no doubt that the precipitate you obtained when employing a syrup made from "concentrated liquor" was due to a deficiency of free acid in that preparation. The concentrated "liquor eastonii pro syrupo" of trade varies considerably in this respect, for it has been found that if it be made very acid the phosphate of quinine is apt to crystallise out. In some of these concentrated liquors, therefore, this free acid is reduced and the preparation keeps better. You will find it advisable to use the B.P.C. syrup only for dispensing; you will then know what you are dealing with. When your prescription is made up with this a perfectly clear and bright mixture results, of excellent appearance. [*Reply to* Pharmacist.]

OBITUARY.

Death of an Annuitant.

Davis.—We regret to announce the death, at the age of 79, of Mr. Samuel Forbes Davis, chemist and druggist, formerly of Seven Sisters Road, Holloway, but lately of Southend-on-Sea. Mr. Davis had been an annuitant on the Benevolent Fund since 1890.

Dinnis.—On July 27, John Dinnis, Chemist and Druggist, of Brighton. (Aged 67.)

Marshall.—On August 3, George Marshall, Chemist and Druggist of Runcorn. (Aged 60.)

Marshallsay.—On August 3, Richard Jeanes Marshallsay, Chemist and Druggist, of Wareham. (Aged 71.)

Wootton.—On August 6, William Wootton, Pharmaceutical Chemist, of Liverpool Road, London. (Aged 74.)

Kershaw.—On August 10, William Kershaw, Chemist and Druggist, of Luddenden Foot, Yorkshire. (Aged 50.) Mr. Kershaw was for several years Dispenser at the Halifax Infirmary.

SPECIAL NOTICE.

STUDENTS' NUMBER OF THE JOURNAL.

The *Pharmaceutical Journal* for September 12 next will be specially devoted to educational matters of interest to pharmacists. Information will be given respecting the various institutions in Great Britain and Ireland where courses of instruction are provided for pharmaceutical students, and the secretaries of such institutions are requested to furnish full particulars without delay. Readers who are interested in educational matters should also find this a suitable occasion for contributing suggestions calculated in their opinion to be of service to pharmacy. All communications should be addressed to the "Editor," 17, Bloomsbury Square, W.C.

Communications, Letters, etc., have been received from Messrs. Abraham, Adcock, Alcock, Allan, Allen, Aplin, Beall, Beattie, Beringer, Bokenham, Cardell, Cocks, Coverdale, Davies, Dawson, Dickenson, Dutton, Eberlin, Frost, Gibbs, Green, Gregory, Guédon, Hemming, Hoit, Holding, Holmes, Hunt, Jaffe, John, Keen, Ker, Kerr, Kershaw, Kirkby, Knight, Lander, Martindale, Palmer, Parker, Philp, Poppelreuter, Porter, Proctor, Rayner, Redhead, Reynolds, Rogerson, Shuttleworth, Smith, Sturch, Taylor, Tierney, Thomas, White, Wokes, Wright.

THE TESTING OF QUININE SULPHATE.*

BY MELCHIOR KUBLI.

It is stated by the author that none of the tests usually employed for the detection of the commonly-occurring cinchona alkaloids in commercial quinine sulphate are satisfactory, more especially Kerner's ammonia test as modified in the German Pharmacopœia, (iii.), Schäfer's oxalate test, or De Vrij's chromate test. Cinchonidine as now existing in quinine sulphate, prepared from cultivated cinchona bark, is said to give little or no reaction with Kerner's original ammonia test.

The author suggests two tests for the detection of the other cinchona alkaloids in quinine sulphate, one of which he calls the water test, and the other the carbon dioxide test.

The water test depends on the fact that the sulphates of the cinchona alkaloids, other than quinine, are more soluble in water than quinine sulphate, whilst, on the other hand, their alkaloids are less soluble in water than quinine alkaloid, so that on setting free the base with an alkali from a water solution of a known weight of the sulphate, the quantity of water necessary for the solution of the base is a measure of the purity of the quinine salt.

The test is carried out in the following manner:—1·793 gramme of quinine sulphate which have been dried at 40° to 50°, and contain, therefore, 4·6 per cent., or two molecules of water of crystallisation, or an equivalent amount of the crystalline salt, are dissolved in 60 grammes of boiling water contained in a tared flask, the heating being continued for five minutes. Water is then added from a burette until the total weight amounts to 62 grammes. The contents of the flask are then cooled to 20° with frequent agitation, and allowed to stand for half an hour at 20° C. It is then filtered through a dry filter, and to 5 C.c. of the filtrate exactly three drops of a 10 per cent. solution of pure sodium carbonate are added. Water at 20° C. is then run in from a burette until the opalescence caused by the suspended alkaloids has disappeared. Chemically pure quinine sulphate requires exactly 10 C.c. distilled water at 20° C. to cause the opalescence to disappear. With mixtures of cinchonidine sulphate and quinine sulphate the following results were obtained:—

Quinine sulphate containing	Water required to make a clear solution.
1 per cent. Cinchonidine Sulphate	10·4 C.c.
2 ,, ...	10·8 ,,
3 ,, ...	11·2 ,,
4 ,, ...	11·6 ,,
5 ,, ...	12·0 ,,
6 ,, ...	12·4 ,,
7 ,, ...	12·8 ,,
8 ,, ...	13·20 ,,
10 ,, ...	14·0 ,,
15 ,, ...	16·0 ,,

In these experiments for every increase of 1 per cent. in the amount of cinchonidine sulphate there is a correspondirg increase of 0·4 C.c. of water required.

Similar experiments carried out with mixtures of hydroquinine sulphate and quinine sulphate showed a rise of 0·6 C.c. for every addition of 1 per cent. of hydroquinine sulphate; quinidine sulphate gave an increase of 2·6 C.c.; cinchonine sulphate gave a rise only of 0·7 C.c.; cinchonidine sulphate containing 3 per cent. hydroquinine sulphate required an increase of 0·4 C.c. for 1 per cent. increase. An admixture with quinine sulphate of cinchonidine sulphate (containing 2½ per cent. of quinidine and cinchonine sulphates respectively, and 30 per cent. hydroquinine sulphate) required 0·75 C.c. more water than pure quinine sulphate for every addition of 1 per cent. of the impurity. Mixtures containing varying amounts of three alkaloids other than quinine all showed more or less a concordant rise in the amount of water required to dissolve the opalescence at first produced. It will be noticed that although quinidine alkaloid about equals cinchonidine in solubility in water, and is much less soluble than cinchonine, yet in the presence of quinine the mixed alkaloids required a far larger amount of water for solution than a mixture of any of the other alkaloids. This is explained by the greater solubility in water of the double sulphate of quinine and quinidine, so that a larger precipitate is produced on the addition of the sodium carbonate, hence more water is required for solution.

As the variation in the number of cubic centimetres of water required in this test is dependent to a great extent as to whether the impurity consists of alkaloids which deviate the ray of polarised light to the right or to the left, and on the proportion of such alkaloids in the admixture, the author considers that the maximum rise for each percentage of impurity can be regarded with certainty as amounting to 1 C.c., and the minimum to 0·7 C.c. above the normal 10 C.c. of water required by pure quinine sulphate. It is therefore suggested that 12 C.c. be an official figure for regulating the amount of impurity allowable in commercial quinine sulphate, which would allow an impurity of about 3 per cent. of the other cinchona alkaloids. A sample of commercial sulphate of quinine passing the test of the German Pharmacopœia (iii.) required by the water test 11·5 C.c., which corresponds to an impurity of 1½ to 2 per cent.

The application of the water test for the quantitative determination of the amount of alkaloidal impurity in quinine sulphate is however as with the ammonia test only possible within very narrow limits, and therefore is truly only a qualitative test.

The author, however, believes he has found in the carbon dioxide test a method that will give directly the percentage of impurity in commercial quinine sulphate, and by a combination of both tests it will be possible to ascertain the nature of the impurity.

The Carbon Dioxide Test.—When sodic carbonate is added to a solution of quinine sulphate saturated at the ordinary temperature, the precipitated alkaloid is very easily soluble in sodic bicarbonate, and on passing a stream of carbonic dioxide into the solution the quinine separates as neutral carbonate in beautiful bunches of needles. Quinine carbonate is only very slightly soluble in water, effervesces with acids, readily dissolves in alcohol, and is very slightly alkaline to litmus paper. In the presence of cinchonine, cinchonidine, and quinidine, either singly or together, the separation of the crystals is lessened and delayed, and if the amount of the other alkaloids exceed a certain limit is prevented altogether, but hydroquinine scarcely exerts the same influence.

The carbon dioxide test is carried out in the following manner:—5 C.c. of the saturated solution of the quinine sulphate, prepared in the same way as in the water test, are precipitated with three drops of neutral sodic carbonate, and the precipitate dissolved by adding 5 C.c. of sodic bicarbonate (free from carbonate). Carbon dioxide is then passed through the solution in a stream of about 80 to 100 bubbles per minute for thirty minutes at a temperature of 15° C.: it being essential that the gas be free from atmospheric air before it is passed through the quinine solution. The cylinder is then gently shaken until the volume of the supernatant liquid remains constant, which with a voluminous precipitate occupies thirty minutes or more. The contents of the cylinder are then placed in a measure graduated to 1/10th or at least 1/5th C.c., and allowed to stand for from one to two hours until clear.

With samples of quinine sulphate containing from 1 to 3 per cent. impurity, the liquid frequently requires to stand until next day, the separation being hastened by frequent agitation.

* Abstracted from the *Pharm. Zeit. für Russ.*, 34, Nos. 38-47.

During the passage of the carbonic anhydride the appearance of the separating precipitate gives an indication of the purity of the salt. With pure quinine sulphate the separating flocks are copious, and to the naked eye seem amorphous, although under the microscope they appear as beautiful bunches of needles; with an impurity of 1 per cent. the precipitate is granular, and with 3 and 4 per cent. impurity the precipitate glistens by transmittent light. There is no precipitation after 30 minutes in samples of quinine sulphate containing more than 10 per cent. of other alkaloids.

The following are amongst some of the many results obtained with mixtures of quinine sulphate and the sulphates of the other cinchona alkaloids.

Pure quinine sulphate gives an amorphous precipitate measuring 1·4–1·5 C.c.

Quinine sulphate containing	Sulphates of				Remarks.
	Cinchonidine.	Quinidine.	Hydroquinine.	Cinchonine.	
	C.c.	C c.	C.c.	C.c.	
1 per cent.	1·8–1·9	1·8	1·2–1·3	1·8–2·1	partly granular.
5 ,, ...	0·6	trace	,,	1·0	granular.
10 ,, ...	trace	—	,,	not given	

The appearance of the precipitate is an indication of the impurity in those cases where the volume of the precipitate approaches the normal.

Samples of commercial quinine sulphate when examined by the water and carbon dioxide tests gave the following results:—

	Water test.	Carbon dioxide test.	Impurity.
Sample No. 1 ..	10·5 C.c.	1·4–1·5 C.c., not granular	0·5 per cent.
,, ,, 2 ..	—	1·5–1·6 ,, —	—
,, ,, 3 ..	15·0 ,,	trace	7·0 per cent.
,, ,, 4 ..	18·5 ,,	no precipitate	12 0 ,,
,, ,, 5 ..	17·0 ,,	more than traces	7·0 ,, quinidine and cinchonine
,, ,, 6 ..	16·5 ,,	traces	9·0 per cent.

According to these two methods of testing, chemically pure quinine sulphate is to be regarded as such a preparation as to require 10 C.c. of water in the water test, and to give a volume of quinine carbonate amounting to 1·4 to 1·5 C.c. in the carbon dioxide test. An impurity of 1 per cent. of other alkaloids requires 11 C.c. of water, and gives a precipitate of 1·8 to 2·0 C.c., of which only a part is granular; a 2 per cent. impurity requires not more than 12 C.c., and gives a granular precipitate of not less than 1·4 C.c.; 3, 4, and 5 per cent. impurity should not exceed 13, 14, and 15 C.c. by the water test, and give not less than 1 C.c., 0·8 C.c., and 0·5 C.c. granular precipitate of carbonate.

Nosophene Gauze.—A prolonged use of three per cent. nosophene gauze has convinced Noorden (*Munich Med. Woch.*) that it affords one of the best dressings available. It is easily sterilised in a current of steam, is odourless, has a distinct hæmostatic action, and may be used as a drainage dressing in wounds with abundant secretion; it is superior to iodoform gauze in its action on sores with atonic granulations, and on infectious ulcers, since it stimulates the former and disinfects the latter. In these cases dusting with nosophene is more useful than iodoform, and the scab formed with nosophene is less adherent than that produced with iodoform. Nosophene gauze allows of the simultaneous use, when needful, of silver nitrate: it does not give rise to pain, and does not occasion eczema (*Bull. Gén. de Thérap., Sec. Pharm.*, i., 369, after *Vratch*).

BOTANIC GARDENS OF THE WORLD.

I.—LONDON PRIVATE PHYSIC GARDENS.

Botanic gardens, it must be remembered, were the product of the sixteenth century, and in their origin were emphatically physic gardens or hortyards. All the old herbalists, both in England and abroad, looked upon plants, indeed, as the mere vehicles of physical healing, and had for their aim the identification of the plants employed by Theophrastus, Dioscorides, Pliny, and Galen. Their ignorance of the habitat of plants and the influence of climate and natural conditions upon flora led them to assume that in their own countries there were to be found growing the identical simples of the ancients. Consequently many different native plants were identified with some one plant mentioned by Dioscorides, and the resulting confusion of nomenclature made it necessary for writers of herbals to go straight to nature and actually describe the wild plants growing around them. Plants were sought out for their medicinal virtues, and the enlightened herbalist, trying to arrive at the knowledge of individual forms and their officinal qualities found it convenient to have access to gardens in which he could at his leisure examine specimens.

Our first English botanist, William Turner, afterwards Dean of Wells, as a student of physic at Pembroke Hall, Cambridge, lamented that though there was a hortyard attached to the Hall, so great was the ignorance of the physicians and surgeons of the time, that he could not learn from them the Latin, Greek, or even English names of plants. When, for preaching the reformed doctrine, Turner was banished from the kingdom, he repaired to Italy, a country which may be regarded as the cradle of botany. In that country originated botanic gardens, the earliest being the botanical garden of Padua, established in 1545. Two years later there was established the botanic garden of Pisa, and in 1567 there came into existence the botanic garden of Bologna, under the superintendence of Aldrovandi, and afterwards of the great Cesalpino, the forerunner of systematic botanists. At Bologna, Turner became the earnest disciple of Lucas Ghinus (Luca Chini), public lecturer on Dioscorides and the naming of plants. There he learned to dry plants after the manner of this master, who was the inventor of the herbarium. From Luca Chini, too, Turner learned the practice of field investigation, which lies at the root of botanic gardens. He was shown the best kind of hyacinthus that ever he saw by his "maister," as it grew by the mount Apennine, and visited in search of fresh plants the neighbourhoods of Cremona, Como, Milan, Venice, and Chiavenna. He alludes to these Italian botanical excursions in his *Herbal* under the heading of Larch:—"Antonius Traversus, a ryght gentleman of ye country of Rhetia, when as I lay in hys house, resting after my great labours that I had taken in seking of herbes in ye Alpes, told me for a suretie that ye carpenters of that countrie, knowyng ye holesomnes of ye resin, when they chance upon any plenty of it, whilse they cut ye larch trees, drinck largely thereof, and become as dronken therewith as if they had dronken a great deal of strong wine." Whilst practising as a physician, at first at Basle and afterwards at Cologne, and later in the household of the Earl of Embden, Lord of East Friesland, Turner extended his knowledge of plants, not only through his exploration of the neighbourhood in search of simples, but also through the physic gardens of his friends, especially that of Dr. Gesner at Zurich, the earliest physic garden of Switzerland, and that of Peter Condenberg, "a faithful and learned apothecary at Antwerp." *Trifolium* he first saw growing in Gesner's garden, White Henbane and Pontic Wormwood in Peter Condenberg's garden "with many other strange herbes not to be found in any

other garden in Low Germany." At Cologne, too, Turner had a physic garden of his own, to which he makes several allusions in his *Herbal* and in his *Names of Herbes*. When on the accession of Edward VI., Turner became physician to the Protector, the Duke of Somerset, he made great use of the garden at Sion, and dedicated to his patron the "*Names of Herbes showing in what places of England, Germany and Italy the herbs grow.*" From this little treatise we learn that the raspberry was already a garden plant in England, and amongst the "names of newe founde herbes whereof is no mention in an auncient writer," occur the ladies' mantle, burnet, pimpernel, shepherd's purse, bugle, foxglove, eye-bright, spear-grass, adder's-tongue, goose-foot, wild tansy, woundwort and scabious. When made Dean of Wells, he cultivated rare plants in his garden at Wells, esteeming the "west countrie of al places in England the moste richly replenished with al kindes of straunge and wonderfull workes and giftes of nature." He also had a garden for botanical purposes at the Crutched Friars in London, and several times mentions the garden of his friend, Maister Riches in London, where he says he saw many good and strange herbs which he never saw elsewhere in all England, among them being the herb *Stachys*.

In 1569 there came to England the celebrated Flemish botanist, De l'Obel. He gained the patronage of Lord Zouch, cultivating for him a physic garden at Hackney, then a village, to which he added many new plants discovered by him in the course of several journeys undertaken by him in different parts of England, adding especially to the grasses a number of new species. He also introduced into England several exotic rarities. In this garden of De l'Obel we approach nearer to the botanic garden of to-day. He endeavoured to arrange plants according to their resemblances of form. Beginning with long, narrow, simple-veined leaves, the Grasses, he proceeded to the broader leaved Liliaceæ and Orchidaceæ, then passed on to the Dicotyledonæ which he distributed into well-marked groups, including, however, the Ferns among them because of the formation of their leaves.

John Gerard, first a ship's surgeon, then a prominent member of the Barber-Surgeons Company, about the year 1577 became superintendent of Lord Burleigh's garden, which was reputed to be richer in plants than any in England. Burleigh, he records in the *Herbal*, gave him among other plants "for the little plot of his special care and husbandry," his own physic garden in Holborn, *Lilium chalcedonicum*, which he calls the "Lillie of Constantinople." This garden of Gerard eclipsed that of De l'Obel in fame. "Upon his proper cost and charges," wrote Dr. Baker, physician to Queen Elizabeth, "he hath had out of all parts of the world all the rare simples which by any means he could attain to, not only to have them brought, but hath procured by his excellent knowledge to have them growing in his garden, which as the time of the yeere doth serve may be seen; for there shall you see all manner of strange trees, herbes, rootes, plants, flowers, and other such rare things that it would make a man wonder how one of his degree, not having the purse of a number, could ever accomplish the same." To this garden Gerard added from foreign lands all the varieties that he could obtain, and in the adventurous age of Elizabeth travellers were always coming and going with seeds from abroad. From nearly all parts of the then known world there came to Gerard in London flowers and seeds for the garden in which he laboured constantly, "with the soil to make it fit for the plants, and with the plants to make them to delight in the soile, so that they might live and prosper under our climate as in their native and proper countrie." Camerarius, the renowned discoverer of the sexuality of plants, sent him seeds, as did "that excellent herbarist, that painful and most curious searcher of plants and simples," Jean Robin, of whom in his works he makes frequent mention. "This rare and strange plant," he records for example of barrenwort, *Epimedium alpinum*, "was sent to me from the French king's herbarist, Robinus, dwelling in Paris at the syne of the blacke head in the streete called Du bout du Monde; in English, the end of the world." Robin, indeed, came over to England to see the garden in Holborn, and mightily pleased the Queen's physician by showing less knowledge of rare simples than Gerard, though in Paris "he was considered the only man." De l'Obel's patron, Edward, Lord Zouch, sent Gerard rare seeds from Crete, Spain, and Italy, and he received "other rarities from the farthest parts of the world," through Lord Hunsdon. Nicholas Lete, "a worshipfull marchant of London," added to his garden from Poland "orange tawnie gilliflowers," a variety of pink, and is handed down to us as "greatly in love with rare and faire flowers, for which he doth carefully send into Syria, having a servant there at Aleppo, and in many other countries." This example was followed by Gerard himself, who sent his servant, William Marshall, into the Mediterranean as "chirurgeon to the 'Hercules' of London," thus obtaining several rarities for his collection. Most of Gerard's plants were, however, transplanted to his garden from their English habitat, and in his collection of indigenous plants he was aided by Thomas Hesketh, of Lancashire, Thomas Edwards, an apothecary of Exeter, James Cole, a London merchant, "a lover of plants and very skilful in the knowledge of them," Dr. Bredwell, "a learned and diligent searcher of simples in the West of England," and Dr. Penney, a correspondent of Gesner, Camerarius and De l'Obel, whom Gerard calls "a second Dioscorides, for his singular knowledge of plants." *Lilium martagon*, "the mountain lillie," he received from his "loving friend, Master James Garret, apothecarie in London," one of the earliest and most successful growers of the tulip, "every season bringing forth new plants of sundry colours not before seen, all of which to describe particularly were to roll Sisiphus's stone or number the sands." He was a valued correspondent of De l'Ecluse, to whom he sent rare exotics, and is said to have translated into English A. Costa's work on the drugs of the Indies.

(*To be continued.*)

PHOTO-MICROGRAPHY FOR CHEMISTS.

(*Concluded from page 7.*)

Having described at some length the necessary outfit, it only remains to consider the actual operation of photographing, with the minor points which will crop up meanwhile.

The first thing to do is to light the lamp as already prescribed, and when it is burning steadily turn it with the edge to the sub-stage condenser, the distance between the two being about eight inches, the scope being fixed firmly to the long bed. Unless a proper microscopic lamp (such as the old Bockett, which is hard to beat) be used, it will be necessary to raise the lamp until it is on a level with the optic axis of the microscope, as shown in Fig. 1 (p. 5), and just that part of the flame which gives the most brilliant illumination should be used, which will be about the centre of it, not too low, or the lower cone will be in the field, and not too high or the flame-cap will put in an appearance. Now with the sub-stage condenser focus the flame till it appears as a sharp-cut line across the aperture in the stage, place on the stage an object such as the section of an endogen, or anything that you know well, focus this absolutely sharp with the ordinary eye-piece in the microscope in the usual way, and carefully adjust the lamp till the flame is seen as a bright line falling off equally on both sides; this is important, and somewhat difficult at first, but a little practice and particularly a failure or two in negative making soon wakes one up.

To the beginner one little piece of advice may be given, and that is, learn what you ought to see and how to make all the corrections. It is easy to give advice practically, but how difficult in print! One of the best things to practise with is a Podura scale (*Lepidocystis curvicollis*). These are difficult to get now perfectly mounted and in good condition, but probably Messrs. R. and J. Beck, of Cornhill, would supply one with prints showing the various effects of bad correction, bad focussing, etc. There are numerous other test objects which may also be used in this way, as for instance, the pygidium of a flea, *Pleurosigma angulatum*, etc.

Having focussed the object as sharply as possible, it is advisable to stop down the condenser, commencing with full aperture and closing it very gradually. After each movement of the iris diaphragm, or insertion of a smaller stop, examine the image; for frequently fine detail will be drowned by excess of light and become invisible. When the image is satisfactory, if you have a projection eye-piece insert it in place of the ordinary ocular. The operation of focussing, etc., must be done with the microscope in a horizontal position, because after it has once been adjusted it must not be touched. Now bring the camera to the microscope, not *vice-versâ*, carefully slide the cardboard tube over the eye-piece, and round the end just fold once or twice a red silk handkerchief; this prevents stray light creeping into the camera.

Extend the camera to the desired length, and examine the image on the focussing screen with the eye-piece. In preference to using the screen in its ordinary position it should be placed in the dark slide, both shutters of which should be withdrawn, and in front of it (that is, nearest the front) should be placed a thin piece of black or red ebonite, in which is cut a circle to limit the field. Various sized circles should be kept in stock, and that considered the most suitable selected. A good series will start from 1-inch diameter and run up to three inches by steps of half an inch each time. The advantage of these is that when only a small object is shown it will always be seen in the centre, and it is important to properly centre the object. Sometimes it is necessary to use the fine adjustment at this stage, and it should be connected up with the rod and carefully worked, but the less it is touched the better.

Having fixed upon the extension of camera and satisfactorily adjusted the image, the block of lead should be placed on the base to steady, and the dark slide may be filled with plates, leaving, of course, the ebonite sheet in front of it. The question as to the particular make of plate is a very important one, and really requires an enormous amount of experience to decide, because a stained preparation will require humouring. For the beginner, however, there is one plate which will prove indispensable for artificial light work, and that is the isochromatic. There are three makes, Lumière, Edwards, and Ilford, the first-named being possibly easier to work than the others; the slower variety will be quite quick enough. These plates are very sensitive to yellow, and therefore the exposure is shortened.

Many operators use coloured screens for special preparations or to limit the light to a more or less narrow band of the spectrum, to which the plate is more sensitive. This is another very difficult matter upon which to give advice, unless the actual preparation to be photographed is seen. Roughly, the use of a screen is to cut down the action of certain coloured rays, and in double-stained specimens a compromise has to be made, as, for instance, in a methyl violet and picrocarmine double-stained section the violet will act too quickly, whilst the red will not act quickly enough; in this case a pale yellow screen of naphthol yellow, 1:500, placed in front of the lamp will be useful. There are, unfortunately, very few yellow glasses in the market which are worth a straw as screens, because they nearly all dampen the green, which is not required. The only thing to do is to state roughly the action of screens—

Green (chromium green glass) cuts out red and violet.
Green (signal green glass) cuts out orange and some yellow.
All yellows cut down blue and violet.
Blue (cobalt glass) cuts out orange, yellow, and some green.
Violet (methyl violet solution) cuts out yellow and green.
Pale reds cut out green; deep reds, blue, violet, and green entirely.

Whilst many of the ordinary glasses of commerce are quite good enough for screens, a far greater range can be obtained by using alcoholic or semi-aqueous solutions of coal tar colours, and the following will be a good selection:—Naphthol green, brilliant green, naphthol yellow, Manchester yellow, aurine, methylene blue, Nicholson's blue, methyl violet, crystal violet BO, carmine and cochineal red A, scarlet crocein. With these made up in solutions of definite strengths (say 1:200) it will be possible to make a screen of any colour by mere dilution.

Having filled the slides and inserted carefully in the camera back, place in front of the condenser a piece of opaque card to shut off the light and withdraw the dark slide shutter; remove the opaque card and give the necessary exposure. Exposure is always a bugbear, and as no real guide can be given, the only thing to do is to give extracts from actual practice, as recorded in a note-book which must be carefully kept by a photo-micrographer.

As regards the developer, this may be either hydroquinone or else metol and hydroquinone, and good contrast should be tried for.

As regards printing, the most pleasing method is, of course, by contact on glass, so that they can be used for the magic lantern, but for paper the ordinary gelatino-chloride or printing out paper should be chosen, with a glossy surface, as this renders detail better than anything else.

Table showing Conditions and Results in the Case of Selected Objects.

Object.	Eye-piece.	Light.	Screen.	Camera Extension.	Exposure.	Objective.	Magnification.	Remarks.
Fritillaria imperialis, cell development	2 proj.	lime	Yellow glass.	22	3 m.	$\frac{1}{6}$ Reichert	264 ×	Hæmatoxylin stained, balsam mount. Good result.
Pleurosigma angulatum	3 proj.	3 wick paraffin and bull's-eye.	Peacock blue	22	11 m.	$\frac{1}{12}$ Zeiss	792 ×	Dry mount. Very fine.
Spermatozoa, human	6 proj.	$\frac{1}{2}$" edge.	Methylene blue	24	$8\frac{1}{2}$ m.	$\frac{1}{12}$ Zeiss	1700 ×	Very fine.
Ascaris ova	6 proj.	$\frac{1}{2}$" edge.	Methylene blue	26	8 m.	$\frac{1}{4}$ Powell	600 ×	Good.

SOLID EXTRACTS AND THEIR STANDARDISATION.*

BY CHARLES H. LA WALL.

With each succeeding revision of the United States Pharmacopœia since 1860 there has been a marked improvement in the various classes of galenical preparations. The processes for the individual tinctures and fluid extracts have been subjected to criticism, and subsequently altered when it was found necessary, so that, at the present time, an official process, when carefully adhered to in all of its details, will produce a satisfactory preparation.

It is particularly noticeable that the solid extracts have not shared, to any great extent, in the improvements of the past few decades, but that the same lack of uniformity exists at the present time as was formerly the case. The pharmacist of to-day, when he goes to the shelf for a jar of solid extract to aid him in compounding a prescription, is under the same disadvantage as formerly, in not certainly knowing whether he will be able to pour out the required quantity, or whether it will be necessary to use a hammer and a cold chisel to get it out of the jar. The definition pilular consistence is now, and always will be, subject to as many different interpretations as there are pharmacists. This difficulty (which will never be entirely overcome) is of minor importance to the real one, *i.e.*, the lack of uniformity in strength, when compared with the drug itself. This has been referred to frequently, but has not yet been remedied.

It is a matter of grave importance when we realise that the quantity of extractive matter obtained from a drug bears no definite ratio to the percentage of its active constituents or to its medicinal efficacy, but is influenced almost solely by the degree of dilution of the alcoholic menstruum employed in the percolation of the drug. An unscrupulous manufacturer can obtain twice as much solid extract from a given drug as one who works according to the Pharmacopœia. His profits, therefore, are doubly great, and it matters little to him that his preparation is deficient in medicinal value, since there is no standard to which his product must conform.

Among the leading manufacturers of the present time the watchword is standardisation, and by its aid, is being developed a uniformity in many preparations, even when made from drugs of varying quality. There has been much said both for and against this movement, but its opponents are few, and by this time must realise that it is neither an advertisement nor a fad, but is the natural outcome of the evolutionary forces that have long been at work in the science of practical pharmacy, and, in the cases of opium, cinchona and nux vomica, there are requirements in the present Pharmacopœia both for the drugs and some of the preparations made from them. Since the last revision of that important work, however, many additional drugs have been investigated, and, at the meeting of the American Pharmaceutical Association in 1895, the Committee on the Revision of the Pharmacopœia recommended that standards and processes of assay be adopted also for coca leaves, hydrastis, and pilocarpus.

If convenient and appropriate standards be adopted for the solid extracts of such drugs that have principles which are easily determined, the remaining difficulty would only consist in the preservation of the extracts so as to retain the consistence which they possessed at the time of manufacture. When about 4 or 5 per cent. of glycerin is added to the nearly finished extract, it suffers but slight alteration in consistence even when kept for several years; of course, it must be kept tightly covered, probably one-half of the deterioration of solid extracts being due to neglect of this precaution, in which case loss of moisture causes the extract to become hard and brittle, and produces a corresponding alteration in strength.

* Read at the meeting of the Pennsylvania Pharmaceutical Association, June 16, 1896.

A list has been prepared of the average yield of solid extract obtained in actual practice from those official drugs to which standardisation might easily be applied; to this has been added, in each case, the average percentage of alkaloid present in the drug, and the standard to which the solid extract should conform in alkaloidal content—

Extracts.	Average per cent. of extract obtained.	Average per cent. of alkaloid present in the drug.	Percentage of alkaloid required in a solid extract of standard strength.
Aconite Root	19	0·50	2·50
Belladonna Leaves, Alcoholic	20	0·40	2·00
Cinchona	26	2·50*	10 00*
Colchicum Root	25	0·50	2·00
Conium	28	0·50	1·75
Hyoscyamus	20	0·18	0 90
Physostigma	5	0·20	4·00
Stramonium Seed	20	0·35	1·75
Nux Vomica	Standard has already been adopted.		
Opium	Standard has already been adopted.		

* Percentage of quinine.

In aconite root the percentage of extractive, when compared with the average alkaloidal content of the drug, shows that the extract should contain about 2·50 per cent. of aconitine, determined gravimetrically.

Extract of belladonna leaves (alcoholic) represents about five times its weight of the drug and contains about 2·00 per cent. of alkaloid, determined gravimetrically.

Cinchona contains about 25 per cent. of extractive matter, and should, therefore, assay about 20 per cent. of total alkaloids, one-half of which should be quinine.

Colchicum root yields about 25 per cent. of extract, which should assay about 2·00 per cent. of alkaloid.

Conium fruit yields nearly 30 per cent. of extract, which should contain about 1·75 per cent. of alkaloid.

Hyoscyamus contains about 20 per cent. of extract, which should yield about 0·90 per cent. of alkaloid, determined gravimetrically.

Physostigma yields about 5 per cent. of extractive matter, which corresponds to 4·00 per cent. of ether-soluble-alkaloid.

Stramonium seed contains about 20 per cent. of extractive matter, corresponding to about 1·75 per cent. of alkaloid.

The author has obtained very favourable results in practice, with the above data, in the cases of several of the drugs just enumerated.

In the *Bulletin of Pharmacy*, 1895, page 202, Professor J. B. Nagelvoort published an excellent article, in which he considered the subject of standardisation from a business standpoint. In this paper, Prof. Nagelvoort objects to the use of glucose in solid extracts, and suggests the use of extract of taraxacum as a diluent for those extracts which are considerably over the standard in strength, and he also gives several examples of practical results working with belladonna leaves of varying quality. Extract of liquorice and extract of gentian have also been mentioned for use in diluting, being of comparatively low cost, and practically inert. The use of gentian might be objected to upon the ground of its strong, bitter taste, which would mask the characteristic taste of most drugs, and render identification difficult. Another method, which the author would like to suggest for further experimenting on this subject, is as follows:—

Percolate a portion of the drug with a menstruum about 5 or 10 per cent. lower in alcoholic strength. This will in most cases ensure a larger yield of extract, of correspondingly lower strength. This preparation could be kept on hand, and used as required in cases where dilution becomes necessary. By this method no princi-

ples foreign to the drug are introduced, and it becomes a simple problem for calculation in order to ascertain the proportions of the weaker and the stronger extracts to be mixed to produce an extract of standard strength.

In the case of some solid extracts (such as belladonna) which contain a large amount of chlorophyll, the difficulty is often experienced of having that substance separate out in lumps or clots as the extract nears completion. It can rarely, if ever, be thoroughly incorporated so as to make a perfectly homogeneous extract; and while it is possible to remove this separated chlorophyll without impairing the medicinal activity of the preparation, the extract does not then possess the colour which is characteristic to it, and, in the case of extract of belladonna, resembles the preparation made from the root rather than that made from the leaf.

This difficulty can only be obviated with certainty by evaporating the percolate from the drug under reduced pressure with continuous stirring, which is impracticable for manufacturers of small quantities.

The powdered extracts may be made to conform to fixed standards in the same manner as the solid extracts, and present indications show that but a short time will elapse until standardised extracts, both solid and powdered, will be the rule rather than the exception.

Changes of a radical nature must necessarily be slow in order to be effective. The introduction of the class of preparations known as abstracts into the 1880 Pharmacopœia was too abrupt. They were but little used, and were dismissed from the last revision of that work. This was not due to lack of efficiency in any respect, for their uniformity rendered them preferable to the powdered extracts, which they closely resembled, and the use of which they did not seem to influence in the least; yet, if but one or two of the more important abstracts had been admitted at first, it might have paved the way for the permanent introduction of one of the most desirable classes of preparations the Pharmacopœia has ever contained.

A list is given below of the yield of solid extract obtained from a number of drugs, both official and otherwise, working upon a large scale in practice. These figures may serve as additional data for other workers in the same line, and the author hopes that the subject of the standardisation of the solid extracts will be given careful consideration by all who are interested in the scientific progress of practical pharmacy.

Drug.	Per cent. of extract obtained.	Drug.	Per cent. of extract obtained.
Cannabis indica	13	Buchu	14
Cimicifuga	30	Cornus florida	7
Digitalis	20	Fucus vesiculosus	26
Ergot	14	Cubeb	20
Gentian	35	Colchicum seed	16
Liquorice, purified	55	Damiana	11
Jalap	27	Ignatia amara	19
Juglans	12	Sumbul	28
Leptandra	27	Rumex	40
Quassia	3·5	Viburnum prun.	15
Rhubarb	30	Senega	46
Taraxacum	35	Cotton-root bark	10
Uva ursi	30	Calumba	17
Logwood	5	Valerian	20
Xanthoxylum	6	Viburnum opulus	23
Gelsemium	10	Scutellaria	35
Conium leaf	20	Calendula	30
Hamamelis	25	Jaborandi	25
Triticum	18	Grindelia robusta	20
Kava kava	7	Colchicum (acetic)	25
Pulsatilla	24	Scoparius	17
Serpentaria	10	Rubus	25
Chirata	15	Salvia	25

—*American Journal of Pharmacy.*

OINTMENT BASES.

THEIR MISCIBILITY WITH WATER, ALCOHOL, AND GLYCERIN.

BY ARTHUR ST. ONGE, PH.G.*

Fats are not soluble in water or glycerin, and are practically insoluble in alcohol; they will hold mechanically, however, various quantities of those liquids, this power of mechanical suspension being increased by the presence of alkalies or gummy substances.

The amount of liquids absorbed by fatty bodies or mixtures of fats used as ointment bases varies greatly, the percentage of water taken by the different bases varying from 2 per cent. to 400 per cent., for glycerin varying from 25 per cent. to 600 per cent., and for alcohol 2·82 per cent. to 200 per cent.

The figures given are not absolute, but are useful for the prescription counter, where the question of how much liquid a certain base will absorb often presents itself.

The method used to incorporate the different fluids into the various bases was simply that which a pharmacist would use if he had an ointment to make containing a liquid: that of rubbing the fat with the liquid. I found it to be the most practical of the different processes suggested.

To find the amount of water taken by a base, I weighed 10 grammes of the substance, placed it in a mortar, and the aqueous fluid was gradually added from a burette, triturating often each addition, until the base was saturated. When saturated, the reading on the burette indicated the percentage of fluid taken, the quantity of the base used was such that each 1-10 of 1 C.c. of the liquid used equalled 1 per cent.

For glycerin the same process was followed, only corrections had to be made, due to the difference in the density of the liquids. The specific gravity of glycerin used had to be multiplied by 1·25 to find the number of parts by weight.

For alcohol, the method of procedure had to be modified, on account of the volatility of the liquid. It consisted as before of saturating the base with the liquid, but instead of reading the burette as in the preceding, the saturated base was weighed and from the increased weight the percentage calculated.

Water when mixed with a base gives it a white and creamy appearance; alcohol does not whiten the base nor change the colour, and glycerin makes a mass more or less translucent.

The length of time taken to incorporate the base with the liquid must necessarily vary. When the proportion of liquid is comparatively small compared with the base, as in the case of lard and petroleum jellies, a minute or two is sufficient for complete saturation; bases that absorb from 35 to 65 parts of liquids can be saturated within fifteen to twenty minutes, whilst lanoline and other wool fats cannot be saturated within a reasonable time; it is not due so much to excessive amount of certain liquids that they will take as to their ropiness and stickiness, and their large increase in bulk when being saturated. From 5 to 10 grammes is about the right quantity to use of the various bases to work with. But 5 grammes of lanoline, on being saturated with water, increase so much in volume as to make an inconveniently large mass to manipulate when nearing the point of saturation, and its stickiness so great that one cannot continuously triturate.

Adipatum, an ointment base used as a substitute for lard and consisting of wool fat, vaseline and cerasin, can be saturated with water in less time and with much more ease than lanoline can, although the amount of water taken by the former is larger than the latter. Fats diminish the stickiness of wool fat and also its

* Thesis presented to the Faculty of the Massachusetts College of Pharmacy, April, 1896.

tendency to enormously increase in volume when incorporated with water.

When large quantities of liquids are to be added to bases, they should be added gradually and caused to disappear before another portion is added.

Bases saturated with water will not take glycerin and *vice versâ;* water and glycerin can be used, however, in the same base. A base saturated with alcohol will take up water without the breaking of the mixture.

When two or more liquids are to be incorporated into a base, their previous admixture seems to work better than the separate incorporation. Saturated bases with liquids are not permanent mixtures, the water and alcohol evaporating upon exposure, whilst glycerin has a tendency to separate upon standing; the glycerin appearing as fine globules all through the mass, and the mass becoming readily homogeneous upon stirring. Fats mixed with liquids within two-thirds of the saturating point are comparatively stable.

Ointment bases containing white or yellow wax and the white paraffin jellies, when saturated with water, will grow darker upon standing.

Cerate, spermaceti cerate, ointment, cold cream, goose oil and yellow wax, alboline and white vaseline are the bases referred to above. The other bases did not change in colour.

The various bases after being saturated with water were kept in a dark place for two months, the average temperature being 20° C. (68° F.). At the end of that time on being opened the change in colour was noticed in some of them, but none had grown rancid during that period.

It is a generally conceded fact that the various petroleum jellies will absorb only small quantities of liquids. Castor oil has been said to remedy this effect, at least as far as water was concerned, claiming that it would make them miscible with water in all proportions, the quantity stated being 2 drops of oil for each gramme of liquid.

Mixtures of vaseline, cosmoline and lucilline, each were made with castor oil by both fusion and incorporation, and in each instance failed to have them take up any more water than without the agency of the oil.

I found, however, that 5 per cent. of wax added to the petroleums will cause them to absorb a large quantity of water. By this agency from 35 to 65 parts of water was absorbed by some of the commercial products. These substances being mixtures of hydrocarbons and not definite compounds may somewhat account for this difference in the amount of water taken. Even samples of the same brand will vary somewhat in their absorptive power.

Wool fat is remarkable for the large amount of water and glycerin it will hold. Lanoline and "N. W. K." hydrous wool fat, although containing 30 per cent. of water, are still miscible with twice their own weight of it. These substances when thus saturated contain water in the amount of 328 per cent. of their original weight. The stickiness of these fats is overcome by the use of vaseline and glycerin.

Following is a list of the bases examined with their formulæ and process of manufacture, or the names of the firms producing them, all parts given being parts by weight:

Lard.

Will take 15 parts of water, 9·05 parts of alcohol and 100 parts of glycerin. Lard stated to take 15 parts of water.

Benzoinated Lard U.S.P.

Will take 17 parts of water, 8·36 parts of alcohol and 100 parts of glycerin. Benzoinated lard stated to take 17 parts of water.

Benzoinated Lard with Tincture Benzoin.

Lard ..... 1 pound.
Tr. Benzoin ..... 2 ounces.

Mix and heat on a water bath until alcohol is evaporated and strain.

This is very similar to the preceding.

Lard with Tolu.

Prepared in a similar manner to the official benzoinated lard U.S.P.

Lard with Balm Gilead.

Lard digested with 5 per cent. of Balm Gilead on a water bath until water is evaporated and strained. It has a pale yellow colour and the balsamic odour of Gilead. Same as benzoinated lard U.S.P.

Lard with Benzoic Acid.

Lard melted and 1 per cent. true benzoic acid dissolved in it. Will take 12 parts of water, 6·22 parts of alcohol and 80 parts of glycerin.

Lard with Glycerin.

Lard with 5 per cent. glycerin added. Will take 10 parts of water, 9·85 parts of alcohol and 95 parts of glycerin.

Lard and Resin.

Lard containing 2 per cent. of resin. Will take 22 parts of water, 1080 parts of alcohol and 75 parts of glycerin.

Lard with Vaseline.

Lard ..... 9 parts.
Vaseline ..... 1 part.
Mix them.

Will take 4 parts of water, 4 parts of alcohol and 50 parts of glycerin.

Ointment.

Will take 40 parts of water, 11·49 parts of alcohol and 200 parts of glycerin.

Cerate.

Will take 40 parts of water, 13·25 parts of alcohol and 100 parts of glycerin.

Spermaceti Cerate.

Will take 30 parts of water, 9·69 parts of alcohol and 80 parts of glycerin.

Cold Cream.

Will take 50 parts of water, 5·68 parts of alcohol and 300 parts of glycerin.

Coconut Oil.

Will take 100 parts of water, 54·8 parts of alcohol and 50 parts of glycerin.

Goose Oil and Cacao Butter.

Goose Oil ..... 6 parts.
Cacao Butter ..... 1 part.
Melt the cacao butter, add the goose oil, and stir until cold.

This will take 30 parts of water, 47·94 parts of alcohol, and 200 parts of glycerin. Does not hold the glycerin well.

Goose Oil and Yellow Wax.

Goose Oil ..... 6 parts
Yellow Wax ..... 1 part.
Melt the wax, add the goose oil, and stir until cold.

This will take 100 parts of water, 37·67 parts of alcohol, and 600 parts of glycerin. The glycerin separates badly.

Petrolatum.

(Origin unknown.)

Will take 10 parts of water, 5·72 parts of alcohol, and 100 parts of glycerin. With 5 per cent. yellow wax it will take 55 parts of water. Amount of water stated at 4 parts.

Cosmoline.

(E. F. Houghton and Co., Philadelphia.)

Will take 15 parts of water, 8·54 parts of alcohol, and 100 parts of glycerin. With 5 per cent. yellow wax it will take 55 parts of water. Amount of water stated at 4 parts.

Lucilline.

(Lucent Oil Works, Philadelphia.)

Will take 12 parts of water, 6·09 parts of alcohol, and 100 parts of glycerin. With 5 per cent. yellow wax it will take 35 parts of water.

Vaseline.

(Chesebrough Manufacturing Co.)

Will take 12 parts of water, 11·14 parts of alcohol, and 100 parts of glycerin. With 5 per cent. of yellow wax, it will take 65 parts of water. Amount of water stated as 4 parts.

White Vaseline.

(Chesebrough Manufacturing Co.)

Will take 10 parts of water, 9·44 of alcohol and 150 parts of glycerin. With 5 per cent. of white wax, it will take 60 parts of water.

Alboline.

(McKesson and Robins.)

Will take two parts of water, 2·82 parts of alcohol and 25 parts of glycerin. With 5 per cent. of white wax, it will take 15 parts of water. This the least absorptive of the various bases examined.

Mollosin.

Paraffin Oil	4 parts.
Yellow Wax	1 part.

Melt the wax, and the paraffin oil and stir until cold.

This will absorb 112 parts of water, 14·5 parts of alcohol, and 100 parts of glycerin.

Lanoline.

Will take 200 parts of water, 8·14 parts of alcohol and 200 parts of glycerin.

Anhydrous Wool Fat.

(Adeps Lanæ, "N. W. K.")

Will take 200 parts of water, 5·34 parts of alcohol, and 200 parts of glycerin.

Agnine.

(Metcalf and Co. Boston.)

Will take twice its weight in water, and 100 parts of glycerin. With 200 parts of alcohol is a yellow liquid. Agnine with 30 parts of water has not the ointment-like appearance of lanoline. It is darker and not ropy, but is short and mealy.

Lanoline Ointment.

Lanoline	3 parts.
Vaseline	1 part.

Mix.

This will take 150 parts of water, 8·86 parts of alcohol, and 200 parts of glycerin.

Unguentum Lanoline.

Anhydrous Lanoline	65 parts.
Liquid Paraffin	30 parts.
White Cerasin	5 parts.
Water	30 parts.

Melt lanoline and cerasin together, then add the paraffin oil and water, and stir constantly until cold.

This will take 30 parts of water, 9·40 parts of alcohol, and 300 parts of glycerin. When saturated with glycerin it is completely free from the stickiness of lanoline.

Adipatum.

Anhydrous Lanoline	35 parts.
Vaseline	63 parts.
White Cerasin	7 parts.
Water	5 parts.

Melt the lanoline and cerasin, then add the vaseline, then the water, and stir until cold.

This will take 400 parts of water, 11·88 parts of alcohol, and 400 parts of glycerin. When saturated with glycerin it is entirely free from the stickiness of lanoline.

Epidermine.

Equal parts of white wax, glycerin, acacia, and water. Rub acacia with glycerin and water. The wax is melted and added to the mucilage previously warmed to about 65° F., so as not to chill the wax, and stir until cold. Behaves with water like an emulsion. A thick, white, syrupy substance with 200 parts glycerin; with 50 parts of alcohol a white, sticky, ointment mass. This mass treated with 50 per cent. water gives a white emulsion.

Mollin.

A superfatted soap and glycerin, 100 parts of cocoanut oil or fresh fat, 40 parts of a 15 per cent. solution of potash; saponify without heat, then add 30 parts of glycerin, mix intimately and heat carefully. Ten per cent. of water softens the base; with its own weight of water it is a milk-white emulsion, which separates on standing. Mixes with glycerin, softened or liquefied by it according to quantity. Will take 5·36 parts of alcohol.

Casein Ointment.

Dissolve 34·5 parts of caustic potash and 8·5 parts of caustic soda in 5000 parts of water, and dissolve 1400 parts of casein in this solution. Now add 700 parts of glycerin and 50 parts of carbolic acid, and when they are dissolved incorporate 2000 parts of vaseline and 50 parts of zinc oxide, finally add water enough to make 10,000 parts. May be diluted almost indefinitely with water or glycerin. Alcohol liquefies it: with 10 per cent. almost a fluid, 25 per cent. of it breaks the emulsion. It is thickened by alkalies and broken up by acids.

All the above bases were kept four months, in closed containers, at a temperature of about 20° C. (68 F.) and in a dark place, without showing any rancidity.

A condensed chart of the various bases is appended, showing the amount of water, alcohol and glycerin taken up by each—

Name.	Amount of Water.	Amount of Alcohol.	Amount of Glycerin.	Amount stated.
Lard	15·	9·05	100·	15 of water
Benzoinated Lard, U.S.P.	17·	8 36	100·	17 of water
Lard with Tr. Benzoin	17·	—	—	
Lard with Benzoic Acid	12·	6·22	80·	
Lard with Balsam Tolu	17·	—	—	
Lard with Balm Gilead	17·	—	—	
Lard with Glycerin	10·	9·85	95·	
Lard with Resin	22·	10·80	75·	
Lard with Vaseline	4·	4·	50·	
Ointment	40·	11·49	200·	
Cerate	40·	13·25	100·	
Spermaceti Cerate	30·	9 69	80·	
Cold Cream	50·	5·68	300·	
Cocoanut Oil	100·	54·8	50·	
Goose Oil with Cocoa Butter	30·	47·94	200·	
Goose Oil with Yellow Wax	100·	37·67	600·	
Petrolatum	10·	5·72	100·	
with 5 p.c. Yellow Wax	40·	—	—	
Cosmoline	15·	8·54	100·	4 of water
with 5 p.c. Yellow Wax	55·	—	—	
Lucilline	12·	6·09	100·	
with 5 p.c. Yellow Wax	35·	—	—	
Vaseline	12·	11·14	100·	4 of water
with 5 p.c. Yellow Wax	65·	—	—	
White Vaseline	10·	9 44	150·	
with 5 p.c. White Wax	60·	—	—	
Alboline	2·	2·82	25·	
with 5 p.c. White Wax	15·	—	—	
Mollosin	112·	14·50	100·	
Lanoline	200·	8·14	200·	200 of water 200 of glycerin
Agnine	200·	200·	100·	
Hydrous Wool Fat	200·	5·34	200·	200 of water
Lanoline Ointment	150·	8·86	200·	
Unguentum Lanoline	300·	9·40	300·	100 of water
Adapatum	400·	11·88	400·	
Epidermine	Indefinite	50·	Indef.	
Mollin	Alm. indef.	5·36	,,	
Casein Ointment	Indefinite	10· fluid 25· breaks emulsion	,,	

—*New England Druggist.*

ACTION OF LIGHT UPON PHARMACEUTICAL PRODUCTS.

BY PROF. A. B. STEVENS,

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As we pass through chemical laboratories or dispensing pharmacies, the question arises, "How many pharmacists understand the wondrous action of light, or if they understand, how many consider its action upon their pharmaceutical products?"

Few pharmacists pause and consider the effects produced upon the substances in their shelf bottles, which day after day, and sometimes month after month, are exposed not only to the action of light, but often of strong sunlight, constantly modifying, frequently impairing, and in many cases absolutely destroying, the therapeutic value of the drug. Immerse a bit of white paper in strong sunlight for a few hours, compare with one that has been carefully protected from the light's action, observe the change, and consider the changes produced by this agent upon similar organic bodies. It is in obedience to this law of change that the thrifty housewife carefully excludes the midday sun from rugs and draperies.

Realising the action of this powerful agent, the U.S.P. Committee on Revisions directed that nearly one hundred preparations should be protected. In view of the fact that these important pharmacopœial directions are so frequently overlooked or ignored by pharmacists, the following list from the U.S.P., together with comments upon some of the most important preparations, is here given, in the hope that it may impress upon the minds of at least the younger members of the profession the necessity of a careful protection of these sensitive materials.

Articles Affected by Light.

Benzoic acid should be kept in dark amber-coloured, well-stoppered bottles, in a cold place.

Carbolic acid should be kept in dark amber-coloured, well-stoppered vials.

Hydrobromic acid should be kept in glass-stoppered bottles, protected from the light.

Hydrochloric acid, nitric acid, nitric acid dilute, and nitro-hydrochloric acid dilute should be kept in dark amber-coloured, glass-stoppered bottles.

Nitro-hydrochloric acid should be kept in dark amber-coloured, glass-stoppered bottles, which should not be more than half filled, and kept in a cool place.

Hydrocyanic acid dilute should be kept in small amber-coloured, cork-stoppered vials, in a cool place.

Sulphurous acid should be kept in dark amber-coloured, glass-stoppered bottles, in a cool place protected from light.

Formic acid is darkened by the action of light and air.

Acetic ether should be kept in a cool, dark place.

Ammonium iodide should be kept in small, well-stoppered vials, protected from light.

Amyl nitrite should be kept in small, dark amber-coloured, glass-stoppered vials, in a cool and dark place.

Sulphurated antimony keep in well-stoppered bottles, protected from light.

Apomorphine hydrochlorate keep in dark amber-coloured vials.

Stronger orange-flower water should be kept in loosely-stoppered bottles, in a dark place.

Chlorine water should be made fresh, but when kept should be protected from light and air.

Stronger rose water should be kept in a dark place.

Silver cyanide, iodide, nitrate, diluted nitrate, moulded nitrate and oxide should be kept in dark amber-coloured vials protected from the light.

Arsenic iodide should be kept in glass-stoppered vials protected from light.

Bismuth and ammonium citrate, keep in well-stoppered bottles protected from light.

Chloral and chloroform should be kept in glass-stoppered bottles in a cool, dark place.

Ferric citrate, iron and ammonia citrate, iron and ammonia tartrate, iron and potassium tartrate, iron and quinine citrate, soluble iron and quinine citrate, iron and strychnine citrate, should be kept in well-stoppered bottles, protected from the light.

Saccharated ferrous iodide should be kept in a cool and dark place.

Soluble ferric phosphate and pyrophosphate should be kept in dark amber, stoppered bottles.

Iron valerianate in a cool, dark place.

Mild mercurous chloride and mercuric cyanide should be kept in dark amber-coloured bottles.

Yellow mercurous iodide should be kept in dark amber-coloured bottles with the least possible exposure to light.

Red mercuric iodide, yellow mercuric oxide, red mercuric oxide, yellow mercuric sulphate, ammoniated mercury and mercury with chalk are to be protected from light.

Iodoform, solution ferric acetate, solution of chlorinated soda and methyl salicylate are to be kept in a cool place, protected from light.

Naphthol, keep in dark amber-coloured bottles.

Volatile oils, 23 are directed to be kept in cool places, protected from light.

Physostigmine salicylate and sulphate should be kept in small dark amber-coloured vials.

Lead iodide is to be protected from light.

Pyrogallol, keep in dark amber-coloured vials.

All of the quinine salts should be kept in a dark place.

Resorcin and santonin should be kept in dark amber-coloured vials.

Sodium salicylate, protect from heat and light.

Spirit of nitrous ether in small, dark amber-coloured vials, in a cool place.

Spirit of phosphorus keep in small, dark amber-coloured vials, in a cool, dark place.

Stronium iodide keep in dark amber-coloured glass-stoppered vials.

Terebene should be kept in a cool place, protected from light.

Tincture of chloride of iron should be protected from light.

Other Chemicals Acted upon by Light.

The action of light upon silver compounds is a problem upon which a vast amount of study and investigation has been expended. Few investigators agree as to the actual compounds formed, but nearly all have proven that the action is one of reduction.

Silver chloride, when fused repeatedly or until all traces of the nitrate or organic impurities are lost, is unaffected by light. Niepce de St. Victor discovered that paper coated with egg albumin and dipped in a solution of silver is far more sensitive than when used with the silver salt alone. At the present time silver salts are invariably associated with albumin, gelatin, or collodion in all photographic plates.

Chloral becomes acid on exposure to light and air.

Chloroform, when absolute and all air is excluded, is not acted upon by sunlight, but in the presence of air is rapidly decomposed The presence of more than 1½ per cent. of alcohol prevents decomposition; smaller quantities retard the action in proportion to the quantity present. In the absence of alcohol chlorine is liberated.

In the presence of alcohol the chlorine is converted into hydrochloric acid. For further study of the action of light upon chloroform see *Pharmaceutical Journal and Transactions*, vol. 23, 1893, pages 792 and 1005.

Creosote, when pure, is not acted upon by light, but when a small quantity of tar oils is present, light darkens it.

Sulphurous acid is decomposed by light, forming free sulphur and oxygen. The oxygen combines with a portion of the sulphurous acid to form sulphuric acid—

$$SO_2 = S + O_2$$
$$2SO_2 + 2O + 2H_2O = 2H_2SO_4.$$

Hydrocyanic acid is decomposed by light and air, forming different substances under different conditions. The greatest care must be exercised to promote its preservation. The following is the method employed in the prescription department of one American School of Pharmacy. A block of wood whose dimensions are 2 by 2½ by 6 inches is procured. Eight holes of sufficient size that each will accommodate a dram vial are bored in this block. The vials, filled with freshly-made hydrocyanic acid, are corked, placed in the holes prepared to receive them, and the holes closed with corks. When a prescription requiring this acid is received, the acid is taken from one of the vials, and should any acid remain in the opened vial it is thrown away. This method insures fresh acid for each prescription.

Ferric salts.—Inorganic ferric salts, when pure, are stable, but when associated with organic compounds they are invariably reduced to ferrous compounds by the action of light. For example, ferric chloride and the solution of ferric chloride are unaffected by light, while the alcoholic tincture of the solution is partly reduced to ferrous chloride—

$$Fe_2Cl_6 + C_2H_6O = 2FeCl_2 + C_2H_4O + HCl.$$

Hence the U.S.P. directs that it shall be protected. Many of the ferric salts with organic acids are so sensitive to the action of light that they are used for photographic printing. The cyanotypes or blue prints are made by exposing paper coated with a solution of ammonio ferric tartrate and placed under a negative to the action of sunlight. When the iron is reduced to a ferrous condition, the paper is floated upon a solution of potassium ferri-cyanide, forming ferrous ferri-cyanide. The kallitype printing process is based upon the reduction of ferric oxalate to ferrous oxalate by light. Sodium ferric oxalate acts in a similar manner, producing an orange-coloured image which is developed with a solution containing silver nitrate.

Mercurous chloride, when in the dark, is not acted upon by the air. Exposed to light it gradually darkens, indicating partial reduction.

Mercuric cyanide is affected in a similar manner.

Mercurous iodide is easily decomposed by light into mercuric iodide and mercury. Mercuric oxides, both red and yellow, are partially reduced by light.

Iodoform is decomposed by sunlight with the liberation of iodine.

Volatile oils are easily decomposed and even alcoholic solutions easily affected by the same agent. Therefore not only volatile oils but perfumes also should be protected.

The ornamental display of perfumes in clear glass bottles upon the case or shelves is a mistake. Exclude the light from them and the quality will be their best advertiser.

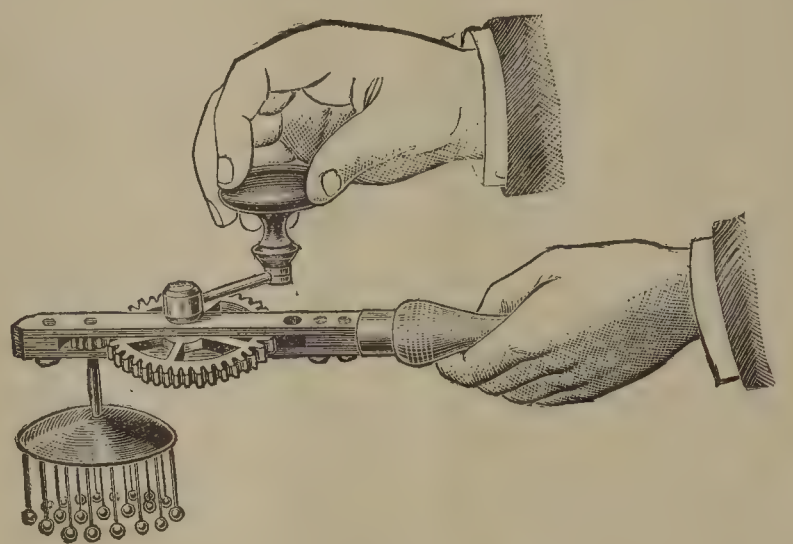
Spiritus ætheris nitrosi rapidly decomposes under the action of light and air, becoming acid. Samples have been found that had decomposed and refused to give a test for ethyl nitrite.

Syrup of ferrous iodide which has oxidised by the action of air may be completely reduced to the ferrous condition by exposure to sunlight. It has been suggested that an acid ferric salt might be formed in the sunlight. This, however, is not the case, as a small sample exposed to sunlight for a period of six months refused to yield more than the faintest ferric test.—*Phi Chi Communicator.*

A NEW GELATIN PILL COATER.

BY JAMES COCKS.

The disadvantages hitherto accompanying the coating with gelatin of small quantities of pills, such as might be ordered in prescriptions, can be entirely obviated by the use of the simple machine illustrated below. The method of using this is almost obvious; the pills are placed on the needles, immersed in the solution (previously prepared by dissolving a little of the base with a gentle heat in a shallow vessel), rotated slightly, then removed, rotated again briskly for a few minutes with the pills uppermost, and set aside to dry.



The formula for the stock base to be used in connection with the pill coater is an improvement on Remington's, of which it is a modification:—

GELATIN BASE.

Best Shell Gelatin	2½ ozs.
Mucilage Acacia	2 fl. ozs. (acacia, 4 ozs.; water, 7½ ozs.)
Saturated Solution of Boric Acid	7 fl. ozs.

Macerate the gelatin with the boric acid solution until it softens, dissolve by heating in a water bath, slowly add the mucilage, and strain.

The advantage of a readily soluble gelatin coating, speedily accomplished, is at once apparent. The pills can be flavoured to any taste, or coloured to any tint, by adding to the base previously. Its ready solubility can be easily tested by placing a pill in a little artificial gastric juice heated to 98° (pepsin, gr. 2; acid hydrochlor. dil., ♏v.; distilled water, ℥j.), and it will be found to compare very favourably with silvered, varnished, or pearl-coated pills. Varnished pills are wholly, and pearl-coated ones partly, covered with a resin, soluble only in spirit, and this is a great disadvantage. The new Regulations of the Board of Trade require that all pills for use on passenger ships are to be gelatin coated.

INFLUENCE OF SOMATOSE ON LACTATION.—In cases where the supply of maternal milk threatens to cease, or is insufficient for the proper nourishment of the infant, Drew gives three or four teaspoonfuls of somatose daily, taken in milk, coffee, or other nutritive fluid. A large number of cases in which this treatment has been followed have given the best results (*Rev. de Thérap.*, lxiii., 392).

PHARMACEUTICAL JOURNAL.

A Weekly Record of Pharmacy and Allied Sciences.

ESTABLISHED 1841.

Circulating in the United Kingdom, France, Germany, Austria, Italy, Russia, Switzerland, Canada, the United States, South America, India, Australasia, South Africa, etc.

Editorial Office: 17, BLOOMSBURY SQUARE, W.C.

Publishing and Advertising Office: 5, SERLE STREET, W.C.

LONDON: SATURDAY, AUGUST 22, 1896.

THE TREATMENT OF PRESCRIPTIONS.

Reference was made in a recent number of the Journal to a protest entered by Dr. W. R. Gowers against the alleged defacement and alteration of prescriptions by druggists who dispense them. The statement made in the *Lancet* was that "it is not uncommon to see a prescription on which the whole space written upon is occupied by the impressions of rubber stamps." This sentence apparently requires the insertion of a negative before the word "written," in order to properly express the writer's meaning, for cases must be exceedingly rare in which the druggist impresses his name and address in such a manner as to partially obliterate the text of the prescription. Yet this is the logical inference from the sentence quoted. Presumably, however, the complaint is that the margins of the paper on which the prescription is written are marked with rubber stamps to an objectionable degree. The writer also alleges that dispensers offend still further, as he has seen several prescriptions in which alterations had been made in the doses (? quantities ordered) of certain ingredients, against the names of which there had been written in ink by the dispenser the initials of a firm and a date in figures. This, he thinks, can only be for the druggist's private convenience, and he maintains that no impression of a stamp or writing should be placed on the face of a prescription by dispensers.

To some extent this letter raises the old contention as to the property in a prescription, and on the assumption that this is vested in the patient, it might be considered as outside a medical practitioner's province to interfere in what is, after all, a necessity of registration, to the advantage of the patient much more than to the pharmacist. For experience proves that there is considerable advantage in stamping the prescription, and especially from a public point of view. The stamp serves primarily as an indication that the prescription has been dispensed before, and in a case where an unusually large dose of any medicament is ordered, the fact that the medicine has already been dispensed may save those who handle the prescription subsequently a considerable amount of trouble and mental worry. Again, if the prescriber who has ordered a strong remedy will take the trouble to ask for and examine his prescription after some lapse of time, he is able to judge from the number of stamps whether his patient is indulging in excessive repetitions. Further, if the prescription orders a scheduled poison, or any mistake occurs on the part of prescriber or dispenser, the stamp serves as a guide to anyone whose duty it may become to investigate the matter. The stamp may be regarded, therefore, as not only convenient but necessary, and the only points for consideration are details regarding the nature of the stamp, the manner of application, etc., etc. The ideal stamp would appear to be one in which the name and address, reference to prescription book and date of dispensing are clearly indicated in the smallest possible space. The impression should be in a prominent position, in order that it shall not be overlooked, and no better position is available than the margins of the written page. Why should not a specially wide margin be left on all sheets of prescription paper for this particular purpose? To consider, as a matter of courtesy, the plan suggested by Dr. Gowers, we find that he would confine the stamping to the back of the prescription, but from information supplied by a leading London pharmacy, it appears that about one-third of the prescriptions received are written on both sides of the paper. It is obviously impossible, therefore, to have any fixed rule stipulating that a pharmacist shall not stamp a prescription on the side written upon. But whilst recognising the necessity of stamping the prescription and the advisability of continuing the practice upon such lines as are common at present, it is nevertheless equally necessary to protest against any abuse of the practice. The pharmacist is fallen low indeed who stoops to this means of advertising himself or his preparations, and no terms could be found too strong to reprobate such unprofessional conduct.

Dr. Gowers' further grievance, that dispensers alter the text of prescriptions, even if based on experience, cannot be properly considered without a full statement of facts. At the same time, it may safely be asserted that it is not customary for dispensers to make such alterations without the consent of the writer. But the latter cannot easily be communicated with always, or in other ways the pharmacist is obliged at times to use his own discretion when he is faced with difficulties, sometimes due to hurry or carelessness on the part of prescribers. It is not only quite conceivable that circumstances may thus arise which fully justify some slight divergence from the strict letter of the prescription, but it is impossible to lay down any rule on this point. It is sufficient to say that the fully qualified dispenser ought always to be capable of exercising a proper discretion; it is indeed his duty to do so in the interest of patients, altogether irrespective of discomfort to himself or the fads of any particular members of the medical profession. Above everything else, however, there should always be a right understanding between prescriber and dispenser, and in this connection it may not be amiss to point out that all medical practitioners are not uniformly courteous to pharmacists who have occasion to consult them with regard to difficulties raised by their prescriptions. To be gruffly received when doing his best to maintain the physician's reputation does not conduce to encourage a dispenser to act similarly in the future. And without granting that such is the effect produced, it may be suggested that most people would consider the dispenser fully justified in acting upon his own initiative in future. The pharmacist is the physician's equal, not his subordinate, and a proper realisation of this fact is essential to a jointly satisfactory delimitation of their respective spheres of duty.

ANNOTATIONS.

The Students' Number of the Journal published last year proved so successful in meeting a need felt by pharmaceutical students in search of information on educational matters, that it has been considered desirable to repeat the experiment on September 12 next. Principals and secretaries of schools of pharmacy, or other institutions where pharmaceutical students are specially provided for, are requested to communicate full particulars of the respective courses of instruction to the Editor, if they have not already done so.

Members and Associates of the Pharmaceutical Society are also reminded that, inasmuch as Education is the pivot on which future progress in pharmacy will turn, it is well worth their while to consider whether existing arrangements concerning pupil-age and education in pharmacy are capable of improvement, and if so how that improvement can best be effected. Nowhere can they discuss such matters so freely and without being influenced by external prejudices as in the *Pharmaceutical Journal*, their own exclusive organ, and the Editor will be very glad to receive communications for the Students' Number, bearing either directly or indirectly upon the important questions referred to.

The Supply of Pharmaceutical Students, like that of pupils of other crafts, is always in excess of demand, and some readers may therefore have discovered a feeble and aimless joke in a sentence on page 148, in last week's Journal. By substituting the word "students" for "chemists," the wicked compositor made the sentence read, "the prospect of maintaining the number of pharmaceutical *students* at even the present low level is none too promising." Taken with the context this sentence means nothing, for of course the falling off referred to is in the ranks of pharmaceutical chemists. Problems:—(1) What means, if any, are likely to prove efficacious in checking this tendency, if it is worth checking? (2) Might it not be better on the whole to concentrate the energies of the craft on elevating the chemist and druggist to the position—as regards knowledge and privileges—of the pharmaceutical chemist of to-day?

The Bell Scholars, even, of the future may not proceed to the Major examination if, as a past scholar thinks (see p. 175), they are likely to be handicapped by the new scholastic arrangements at the "Square." He considers it may be taken as an axiom that the original idea with regard to the scholarships was that they should enable impecunious but deserving youths to qualify as pharmaceutical chemists. Whilst all the classes for both Minor and Major examinations could be attended during one session of the School of Pharmacy this was easy enough, but unless elementary and advanced classes are attended at the same time—an impracticable alternative—it is difficult to see how it can be done in future. Assuming then that the Bell Scholars are only entitled to attend classes free during one session, and receive no further pecuniary assistance, our correspondent thinks this matter should be taken into serious consideration. He does not suggest, however, that Bell Scholars would not make excellent "chemists and druggists," and as such be a credit to pharmacy.

The Jubilee of the Chemical Society was celebrated on a grand scale five years ago, and already a record of the proceedings on that occasion is being issued. The volume, of three hundred pages, is prefaced by a portrait of Thomas Graham, first president of the Society, and contains the full text of all the addresses presented on the occasion of the jubilee, together with an account of the history and development of the Society, which is coeval with the Pharmaceutical Society of Great Britain.

Defects in German Technical Training ought to be regarded as anomalies, if the constant laudations of the methods of the Teuton by a certain class of people in that country afforded a true criterion of the value of those methods. But Germans themselves appear to feel none too sure of their position in the industrial world. For example, Professor A. Riedler, of Berlin, thinks that so far from being perfect, or nearly so, German technical training is defective in many ways, and in more than one direction might take useful hints from England. Knowledge without practical application, he says, is the cause of the growing disinclination of youth to do detail work, and at the same time of the increasing uselessness of those who have only scientific, that is to say one-sided, theoretical education. Another result is the decrease in self-education by independent work. The formal doing of the full amount of school work and passing the necessary examinations contributes its quota in keeping back youth from self-education. The entire rearing must be permeated by the practical spirit, but the Germans tend by nature to the dogmatical, to dreaming, while the Anglo-Saxons take hold of everything from the very beginning practically and technically. What is required is that Germans should avoid excess of learned training; for this reason they need before all other things technical training which teaches to think practically and put into use, which trains a practical and not a learned youth. In Germany the State and its officials exercise an unhealthful influence on the practical and economic sense, because all higher studies are arranged specially for the training of State officials. Moreover, a great hindrance is the age that German students reach before they enter into active life. The gymnasial examination, for example, occurs often in the twentieth year, the builder's examination in the twenty-fifth year; in the meantime competitors in foreign countries have been already from five to seven years in active life. Professor Riedler concludes by giving a list of reforms in technical education which he regards as necessary to bring it up to the standard of other countries, including England.

Medical Cryptography.—According to the *Bulletin Médicale*, the doctors of Austria and Germany find that Latin, in which they have been wont to write their prescriptions, is becoming too well known and understood by the laity, consequently one of their number suggests that in future physicians should write their prescriptions in Latin, but employ Greek characters. He prescribes ten powders of antipyrin of one gramme each thus:—

℞ *αντιπυριν* ..... 1·0
Δ. Ταλ. Δωσ. Νω ..... x.

Pharmacists, it is said, have always understood this. That, at least, justly remarks our contemporary, is certainly something. French doctors, it continues, generally write so illegibly, that they have no need to further disguise the matter of their prescriptions.

The Chemists' Exhibition, organised by our enterprising contemporary, the *British and Colonial Druggist*, will be opened on Monday next, August 24, and remain open until the following Friday. The National Skating Palace, Argyll Street, London, W., where the exhibition will be held, occupies a central position, being close to the junction of Oxford Street and Regent Street. In addition to exhibits connected with pharmacy, medicine, surgery, sanitation, dietetics, etc., attractive and useful modern scientific inventions will be shown, whilst music and refreshments will supply wants that require constant attention on such occasions. But the chief attraction will doubtless be the opportunity afforded for meeting friends and business acquaintances without expending too much energy in seeking for them.

The British Medical Association and its would-be improvers supply the Editor of the *Practitioner* with his text this month; and he compares the proposed methods of rejuvenation with the process which proved disastrous to the constitution of Pelias, when his daughters were persuaded by Medea that their venerable parent could be restored to youth by chopping him into pieces and boiling them in a caldron. Allowing that the Association—"that somewhat stiff-jointed body"—would be the better for a little renovation, there is yet a distinct danger that it may not emerge from the caldron of rejuvenescence at all, if the reformers have their way, and without doubt it would come out very different in shape to what it originally was. The Association, it is pointed out, lives on and by its Journal, and any tinkering with that may cause the Association to collapse. "If the agitators prevail, the Journal will speedily lose whatever quality of scientific utility and readableness it now possesses," and it is suggested that those gentlemen, knowing little of business and nothing of journalism, "will do well to take warning by the fate of the foolish old woman who killed the goose that laid the golden eggs."

'Science Progress' for August contains a second article on light and electrification, by Professor Oliver Lodge, which concludes with the interesting remark that "we do not yet know whether the sun emits any x-rays at all detectable in the higher region of the atmosphere, or whether this latter variety of radiation is an artificial product recently introduced by man into the operations of Nature." An extinct plant of doubtful affinity, dealt with by A. C. Seward, is the *Sphenophyllites emarginatus* of Brongniart, who describes it as "a plant without any living generic analogue." The work of the Portuguese Geological Survey is discussed by Philip Lake; petrology in America, by Alfred Harker; gold extraction processes, by Dr. T. K. Rose; and the recent values of the magnetic elements at the principal magnetic observatories of the world, by Charles Chree, Superintendent of the Kew Observatory.

Iodine in the Animal Organism.—But the most interesting paper in *Science Progress*, from the medical standpoint, is that in which Dr. W. D. Halliburton treats of myxœdema and the presence of iodine in the animal organism. He refers briefly to Baumann's discovery of thyro iodin (see *Ph. J.*, lvi., 161) and points out that iodine has been shown by Drechsel to occur in other structures than the thyroid. The substance "gorgonin," for example, of the horny skeleton of *Gorgonia cavolinii*, contains iodine in organic combination. It is a proteid, and yields on decomposition with hydrochloric acid leucine, tyrosine, lysine, lysatine (?), iodogorgonic acid, and ammonia. The main practical question involved in the discovery that iodine occurs in the glands of human individuals, *i.e.*, whether it is an essential constituent of the healthy thyroid, is unsettled as yet, but as a point of scientific interest Dr. Halliburton considers the discovery to be one of the most startling of recent years in the domain of chemical physiology.

The Homogeneity of Argon and of Helium is discussed by Professors Ramsay and Collie in a recent number of the *Comptes rendus*. They have submitted both gases to a methodical diffusion, causing them to traverse a duct of porous pipe-clay submitted on one of its surfaces to the action of a vacuum. Hydrogen and helium can be separated by this means, as can also oxygen and carbonic acid, whilst by measuring the rapidity of the descent of a column of mercury introduced in the circuit of the apparatus it has been found possible to arrive at a good determination of the molecular weight of various gases. In the case of argon the separation, if it takes place, is minimal, the densities of the fractions being 19·93 and 20·01 respectively, but with helium the density of the specimen which passed first was 1·874, whilst that of the gas remaining in the apparatus was 2·133. These figures were not changed by a great number of fractionations; even the spectra of the two specimens were identical. It is suggested that if helium consists of a mixture of two gases, they are either of the densities 2·366 and 1·874 respectively or 2·133 and 1·580. The identical nature of the spectra, however, introduces another factor for consideration. Possibly the light and heavy molecules of the gas may have been separated, for there is no proof that all the molecules of a gas are homogeneous, and if further study of the subject yields similar results, it may be necessary to change current ideas on the nature of matter.

Commercial Education in Switzerland is well looked after, government subsidies being given to commercial schools on condition that pupils are not under fourteen years of age, that their school course continues for at least three years, that the money is used only for paying teachers' salaries or buying materials and apparatus used in teaching, and finally that local contributions equal the amount of the subsidies. To ensure the proper expenditure of the grants, officials of the Federal Department of Commerce inspect the schedules of studies, examinations, and expenses at all schools in receipt of subsidies. Another feature of the government arrangements is that poor and deserving scholars are assisted to complete their commercial education by grants of purses. They may continue their studies either at home or abroad, and in the latter case are encouraged to enter banks or other houses of business, whilst also attending college classes in the countries selected. The main object of this concession is to provide a sufficient supply of teachers for the Swiss commercial schools. The fees at these schools range from nothing to thirty francs, or two hundred francs in the case of foreigners, of whom there are 167 out of the 728 pupils attending the schools. The Federal Government contributed £2530 towards last year's expenses—£9796—of the schools, but the total amount of the Federal contribution to commercial education during the twelve months was £24,765, the larger proportion of which was granted to the Swiss Society of Merchants. This Society has branches in London and Paris, comprises forty-three smaller societies with more than five thousand members, and exists mainly for the development of supplementary commercial knowledge by means of evening classes and examinations.

Sweet Cassava containing Hydrocyanic Acid is naturally dangerous to partake of, but it has been found that the risk attending the dietetic use of this valuable starchy food is removed by previously drying it in the sun or artificially. Even bitter cassava of the most poisonous kind is rendered innocuous by this treatment. With regard to the quantity of hydrocyanic acid present in cassava, Mr. E. Francis obtained the following results in 1877:—

Percentage of HCN.	Sweet Cassava.	Bitter Cassava.
Mean	0·0168	0·0275
Highest	0·0238	0·0442
Lowest	0·0113	0·0134

and a sample of the sweet variety recently examined by Dr. W. H. Ince, the Acting Government Analyst at Trinidad, contained 0·01017 per cent. of the acid.

The Presentation to Mr. Schacht duly took place on Wednesday evening, and a full report of the proceedings on the occasion will be found at page 171. Pharmacists all over the country will join with their Bristol *confrères* in congratulating the veteran on the maintenance during so long a period of the high principles he has always inculcated, and they will also echo the wish that in his retirement he may spend a long and happy term of years.

REVIEWS AND NOTICES OF BOOKS.

EAST INDIAN MATERIA MEDICA.

THE INDIGENOUS DRUGS OF INDIA. By KANNY LALL DEY, RAI BAHADUR, C.I.E., F.C.S., assisted by W. MAIR, A.P.S. 2nd edit. Pp. 387. Calcutta: Thacker, Spink, and Co. London: W. Thacker and Co., 87, Newgate Street. 1896.

The first edition of this work was published in 1867, the year before the Pharmacopœia of India was issued. For nearly thirty years Dr. Dey has consistently advocated the necessity for a better knowledge of native Indian remedies, and has also done much by stimulating others to investigate their chemical and therapeutical properties. Since the first edition was published, several important works on the materia medica of India have appeared, viz.: 'The Materia Medica of the Hindus,' by U. C. Dutt; 'The Classical Materia Medica of Western India,' by Dr. Dymock; and its extended version under the name of 'Pharmacographia Indica,' by Dymock, Warden, and Hooper; and the 'Encyclopædic Dictionary of the Economic Products of India,' by Dr. G. Watt. These, however, do not occupy the same position as Dr. Dey's book, which is intended as a text-book for students, and a useful guide-book for those engaged in the commerce of drugs. It also serves as an introduction to the more extensive treatises above mentioned. Dr. Dey has spared no pains to make the work quite up-to-date in every respect, and has availed himself of the valuable assistance of such experts as Dr. G. King in botany, Mr. D. Hooper in chemistry, and Dr. G. Watt and Mr. T. N. Mukharji in materia medica.

These gentlemen have carefully revised the parts relating to their special subjects. The result is a work which the student of East Indian materia medica may safely take as a good practical guide to the properties and real uses of the drugs. By omitting historical notes and physical descriptions, space has been economised and the work kept within a convenient limit as to size and portability. Considerable judgment has been exercised by the author in selecting the vernacular names and synonyms in common use, and in limiting the medicinal uses to such as are practical and not problematical. The typographical arrangements are excellent, and do credit to the editor, Mr. W. Mair (late of Dundee). The arrangement of the drugs is alphabetical throughout the book, with cross references to old official names, this being considered the most convenient for general use. But to counterbalance any difficulty the student might experience from this method a separate classification of the drugs under the natural orders of the plants yielding them is given. The index is a very complete one, and the heads of articles are distinguished in it by the use of small capitals, which is an excellent innovation. An appendix contains a useful summary of the work done on aconitine in the Research Laboratory of the Pharmaceutical Society and by other workers, and a very interesting account of the collection of aconite root in Nepal; also recommendations for methods for the preparation of fluid extracts of Indian drugs, and a table of their doses; finally, a table of the foods of India, also a note on *Ailanthus excelsa*, published in the *Pharmaceutical Journal*, presumably after the work was in type.

So carefully has the work been done, that only two omissions have come under notice, viz., that lukrabo seeds have been identified by Pierre as the produce of *Hydnocarpus antisyphilitica*, and that myrrh is not the produce of *Balsamodendron myrrha* but of *Commiphora abyssinica* and *C. schimperi*. It should be mentioned that the title of the book is slightly misleading, since it includes many drugs not produced in India. It is really a materia medica including all the drugs, both vegetable and mineral, commonly used by the natives of India.

Dr. Dey's book can with confidence be recommended as the book which every medical man in India should keep as a handy work of reference on native drugs. It is "the" book that any student of Indian materia medica should use when studying the collections of Indian drugs in the museum at Netley Hospital, in the museum of the Pharmaceutical Society of Great Britain, or in the Imperial Institute. The merchant interested in drugs, and who is occasionally puzzled by the names under which Indian drugs are sent to this country, will find the index of native names and the notes to which they refer exceedingly useful. It must be very gratifying to Dr. Dey to be able to supply to the public a work on Indian drugs which is thoroughly up-to-date and as reliable as any book can be made, even with the help of experts. That it will command success cannot be doubted.

It may be mentioned in conclusion that the work is dedicated (by permission) "to the Pharmaceutical Society of Great Britain in recognition of the efforts which the Society has for more than fifty years devoted to the advancement of pharmaceutical and pharmacological knowledge."

A PRACTICAL GUIDE TO THE MOSSES.

THE STUDENT'S HAND-BOOK OF BRITISH MOSSES. By H. N. DIXON, M.A., F.L.S., with illustrations and keys to the genera and species by H. G. Jameson, M.A. Pp. 520, with 60 plates. Price 18*s.* 6*d.* Eastbourne: V. T. Sumfield. London: John Wheldon and Co. 1896.

A book on British mosses at a moderate price, illustrated with reliable figures, and containing good descriptions of all the new species has long been a desideratum. Dr. Braithwaite's classical work is still incomplete, and is too expensive for many students of the subject, especially for the numerous operatives in Lancashire and some of the Midland counties, who make the study of mosses their hobby. Too often the writers of books are not those who have a familiar acquaintance with the subjects upon which they write; but in the book now under notice this is not the case. Mr. Dixon has probably as good an acquaintance in the field with the British mosses as any other British botanist, and at all events has quite as keen an eye in lighting upon their distinctive features. The author has had the very practical end in view of making the book a real help to students, and has, therefore, made as few changes as possible in classification and nomenclature, taking into consideration such advances as have recently been made in the scientific knowledge of this group of plants. There is an excellent glossary containing references to figures which are explanatory of the terms used. The introduction will serve better than any scientific text-book to explain the morphology of mosses to the student for science examinations. It is as condensed, and yet as lucid, as could be wished. A very useful feature in the work consists in a series of notes in smaller type, giving the author's ideas as to the value of the species and varieties, etc., together with observations which will greatly help the student, by pointing out the similarities and differences between species that help so greatly where purely scientific descriptions fail. Features often exist which enable the expert at once to discriminate species, such as colour, compactness or looseness of habit, relative height, soil or position, etc., in which the plant grows, which cannot well be placed in a description, but which every naturalist recognises as of importance to the worker in the field. There are sixty plates, each containing about twelve figures. The keys to the genera and species, by Dr. Jameson, will be found very useful to beginners, and those who are not beginners will be satisfied with the useful plan adopted in the text of italicising the leading features in the descriptions of the species and varieties. The fact that the names used in the second edition of Schimper's

'Synopsis' have been adopted as far as possible, and that therefore the names do not differ very much from those of the London 'Catalogue of British Mosses,' is a great advantage to those who have already collections of mosses. Mr. Dixon has certainly deserved well of the botanical public, and there can be no doubt that there is every prospect of the first edition of this really valuable work being speedily exhausted.

Obesity: Its Cause and Treatment. By Thomas Dutton, M.D. Pp. 42. Price 1*s.* 6*d.* net. London: Henry Kimpton, High Holborn, W.C., and Hirschfeld Bros., Fetter Lane, E.C. 1896.

This is a slight contribution to the subject of which it treats, in which the author addresses medical men and others. The hope is expressed that the former may be assisted in obtaining a better knowledge of what is, no doubt, an important subject, and that the public may here obtain some guidance for the dietetic cure of the disease, besides deriving pleasure (*sic*) from perusing the pages of the book and being prevented from wasting their money on "quack" remedies. The conclusions arrived at by the author as regards treatment are that there should be a carefully regulated diet, in which foods containing starch, fats, or sugar must be more or less excluded, accompanied by exercise of as vigorous a kind as the constitution permits, or its substitute in baths, massage, etc.

Our Baby: For Mothers and Nurses. By Mrs. Langton Hewer. Fourth Edition—Revised. Pp. 140. Price 1*s.* 6*d.* Bristol: John Wright and Co. 1896.

In a series of fourteen brief chapters the authoress compresses a marvellous amount of information regarding babies and their ailments. The first chapter is, of course, about "my baby," the most wonderful of its kind in the mother's estimation. The conformation of a perfect baby, its dress and ornamentation, first food, latest food, and possible non-progress of the infant, then receive attention. Discourses on exercise and sleep, and the qualities of a good nurse next pave the way to a detailed enumeration of baby's troubles, chapters being devoted to accidents, illnesses, and medicines. Concluding, the authoress says, "how to bring up a baby in a rational and scientific manner has now been briefly described, and in following the spirit rather than the letter of the foregoing pages, it is believed that mothers and nurses will prove the truth and wisdom of them in their own experience—*experientia multa docet*," or in other words, first catch your baby, then bring it up in the way it should go.

INSTITUTE OF CHEMISTRY.

The results of the July examinations are as follow :—

Practical Examination for the Associateship.—Meredith W. Blyth, Cambridge Univ.; James W. Donald, Glasgow and West of Scotland Technical Coll.; George C. Fry, Yorkshire Coll., Leeds; William M. Hooton, Univ. Coll., Liverpool; Alexander H. M. Muter, King's Coll., London; Ernest L. Peck, Univ. Coll., Liverpool; Robert H. Turnbull, Glasgow and West of Scotland Technical Coll.; Harry M. Smith (for Fellowship), Univ. Colleges of Bristol and Cardiff; James R. Swan, Glasgow and West of Scotland Technical Coll.

Intermediate Examination.—Frank Collingridge, Univ. Coll., London; John Imrie, Glasgow and West of Scotland Technical Coll.; Albert E. Parkes, Mason Coll., Birmingham.

Final Examination for the Associateship (*in Branch A, Mineral Analysis*).—William A. Caspari, Univ. Coll., Liverpool; Charles E. Harrison, Cambridge Univ.; William Trantom, Univ. Coll., Liverpool; (*in Branch D, Organic Analysis*), Charles Mills, Associate of the City and Guilds of London Institute; (*in Branch E, Analysis of Water, Food, and Drugs*), Percy G. Jackson, Univ. Coll., Nottingham.

Special Examination in General Agricultural Chemistry (for Fellowship).—Vincent Edwards, chemist to the Lawes Chemical Manure Company.

BRISTOL PHARMACEUTICAL ASSOCIATION.

PRESENTATION TO MR. G. F. SCHACHT.

On Wednesday last Mr. G. F. Schacht, was presented by the Bristol Pharmaceutical Association with a handsome illuminated address as an expression of the respect he has won throughout his twenty-five years' membership of the Council of the Pharmaceutical Society of Great Britain. It is hardly necessary to remind readers that Mr. Schacht has, during the past quarter of a century, earned for himself a high reputation through his unflagging devotion to his duties in the various capacities of Member of the Council, of the Board of Examiners, and Vice-President of the Society. He has especially distinguished himself by his interest in the development of the science of pharmacy by his insistence upon the necessity for a sound liberal education in candidates for membership of the Society, and by his efforts towards the establishment of a definite academic course to follow upon the preliminary school training. Though his efforts in the last-named direction have not yet seen success, he has at least the satisfaction of knowing that when the long-desired consummation is achieved, it will have been due in no small measure to his influence and unwearying perseverance. It has been felt by the Bristol Pharmaceutical Association that in view both of these services to the Society at large and of the high personal qualities and hearty devotion which have attended Mr. Schacht's membership of the Bristol Association in particular, his retirement from the membership of the Pharmaceutical Council ought not to pass unnoticed. Hence a representative gathering was convened to mark the respect in which he is held among the pharmacists of Bristol.

The meeting was held at the Literary and Philosophic Club, under the chairmanship of Mr. B. Allen, President of the Bristol Association.

GEO. F. SCHACHT.

The actual presentation of the address was reserved, however, for Mr. Charles Townsend, late M.P. for Bristol North, one of the best known members of the Bristol Association.

The Chairman characterised the occasion as extra-ordinary and as exceedingly pleasant. He spoke in terms of high appreciation of Mr. Schacht's many and invaluable services to pharmacy, especially to that higher education which he had always kept in view. By his efforts he had distinctly raised the position of the pharmacist. He had a profound admiration of Mr. Schacht as a pharmacist, as a man who always had the courage of his opinions and never sacrificed principle to profit, and as the model of a courteous gentleman.

Mr. Charles Townsend then addressed Mr. Schacht in warm terms, speaking of the sincere pleasure it afforded him to make this presentation to his old friend. The occasion was a very fitting one, considering that Mr. Schacht had served not only Bristol, but the whole country so far as pharmacy was concerned. Such a career as Mr. Schacht's was most uncommon, and it was of so much interest that he begged leave to sketch it. Mr. Schacht served a seven years' apprenticeship with Messrs. Savory and Moore, and was among the first batch of ten or eleven students educated at Bloomsbury Square under the auspices of the Pharmaceutical Society, the only two now surviving being Mr. Schacht and Dr. Paul, the Editor of the *Pharmaceutical Journal*. Mr. Schacht was the

second student to pass the Major Examination. His chief claim to gratitude lay in the interest he had always taken, even before he was a member of the Pharmaceutical Council, in pharmaceutical education. His paper on this subject, read before a meeting presided over by Mr. Daniel Hanbury, struck a keynote which vibrated for many years. His views in this matter were largely instrumental in his election somewhat early in life to the Pharmaceutical Council, a position he had filled with distinguished ability, and he would doubtless have attained to the presidency had he lived in London—the President being necessarily chosen from the metropolitan members. He had also held the Treasurership of the Pharmaceutical Conference for many years. They wished warmly and cordially to acknowledge Mr. Schacht's services in Bristol. His distinguished ability, scientific attainments, and high character had been recognised not only by his fellow pharmacists, but by the citizens of Bristol generally, for he now occupied a distinguished position on the Council of the University College. He entertained a strong personal attachment to Mr. Schacht, and it was a somewhat curious coincidence that the dates of their respective diplomas were the same, though he had entered the sheepfold by another gate. Might he long be spared to give them the benefit of his wise counsel, for there was no member of the profession or business (call it what they would) who enjoyed more universal respect. He had the sincerest pleasure in handing the testimonial to Mr. Schacht, not because of its intrinsic value so much as that it would be handed down to testify to the great respect and esteem of his fellow pharmacists in Bristol.

The address, which was then handed to Mr. Schacht, was in the following terms:—

To George Frederick Schacht.

We, the members and friends whose names are attached hereto, beg your acceptance of this Address on the occasion of your retirement from the Council of the Pharmaceutical Society of Great Britain, after an unbroken service of twenty-five years.

We heartily congratulate you and ourselves on this long period of active work in the varied capacities of member of the Council, member of the Board of Examiners, and Vice-President.

We gratefully acknowledge the ability and energy with which you have unceasingly served the best interests of pharmacy, as well as the zeal and perseverance which have marked your efforts in the cause of pharmaceutical education.

Moreover, we especially recognise the high personal qualities and hearty devotion which have always been at the command of our Bristol Association.

Though your more public labours may now be ended, we rejoice to know that you will continue to dwell in our midst, and assuring you of our sincere esteem and regard we venture to hope that your sympathy and co-operation may still be accorded to us for many years to come.

(Signed) B. Allen, *President.*
John Stroud, *Treasurer.*
B. Keen, *Hon. Sec.*

G. S. Ball.	Alf. G. Kenderdine.	Charles Townsend.
Joseph Bennett.	John T. Long.	R. J. Troake.
Wm. Berry.	Edward Maish.	G. T. Turner.
Thomas Buxton.	J. Edward Moore.	Algernon Warren.
John Wm. Dibble.	W. Pitchford.	Edwin Wheeler.
R. D. Commans.	John Pitman.	James W. White.
G. W. Isaac.	J. G. Plumley.	J. Wilson.
H. O. Isaac.	Edward Presley.	Edward Young.
Thos. H. Jennings.	John Smith.	

August 19, 1896.

The address is exceedingly handsome, and reflects great credit on the Hon. Sec. of the Association and the members and friends who contributed towards it. It stands in an elaborate Florentine frame of English gold, which in itself is over 4 inches deep, and measures 1 yard 1½ inch by 2 feet 7 inches. It is beautifully illuminated with the arms of the Pharmaceutical Society and of the City of Bristol at the top, whilst there is a neat marginal design and an exquisite spray of large roses in the lower left-hand corner, all hand painted. It was prepared by Mr. William Bennett, lithographer, of Broad Street, Bristol.

Mr. Schacht responded in terms of warm appreciation of the very great honour conferred upon him. The testimonial reminded him that he was supposed to have been connected with pharmaceutical politics for the last forty years. His efforts in that direction had been remarkable for their failures. Few persons had suggested plans for pharmaceutical progress which had been so completely foiled. The Pharmaceutical Conference had been attributed to him as its father. His idea, however, was simply that the Society should peregrinate through the provinces, and do the work now done by the Conference. His scheme stirred men like Deane, Brady, Reynolds, Stoddart, and Hanbury to find a better way of carrying it out. Their conceptions differed from his, and they were too strong for him, but he merged his ideas with theirs, and read the paper which had been referred to, which was a mark in his story brought about by his finding among younger pharmacists and pupils very little chance of improvement. This was a matter of grief to him, so that he did what Mr. Keen was doing with a better-matured scheme—he got a class around him and read chemistry with them. The attention thus attracted led to his being invited to speak before the Council and eventually to his election to that body. His pet scheme, however, as to the peregrinations of the Society fell to the ground. He next prepared an elaborate scheme for provincial pharmaceutical education, but his hope that provincial pharmacists would rally round him was also doomed to disappointment. The hope of all members of the Council since then had been to establish an enforced curriculum, whereby all candidates, before appearing for examination, should be required to show that they had passed through a thorough training in the sciences they professed to understand. The Council had striven earnestly to obtain a Parliamentary Bill, but without success. Their one hope now was by framing a more elaborate syllabus indirectly to compel students to get the right class of education. Their endeavour to improve the training at the School of Pharmacy had resulted quite lately in modifications likely to improve the teaching there. All they could do, however, was to give students the opportunity; they themselves must struggle for the rest. It would be presumptuous in him to say he had retired from the Council, he had only abstained from offering himself for re-election, and that for two reasons:—(1) He was not actually in business, and as every member should know the business of the day, he had given way to a younger and abler man; and (2) as the School had to be re-organised, he did not think it right to take a share in the work unless prepared to remain several years longer. However, he still, thank God, had fair health and ability to take part in the world's work. He had been over-praised, but he was not sorry, because if he did not exactly deserve those laudatory expressions, yet he felt that they described the man his friends wished him to be, and he himself wished to be that person, and do those good things which had been attributed to him. He trusted he might still be spared to work in the cause of pharmacy, that admirable, noble mistress—he was half inclined to say goddess. To him the word pharmacy conveyed a great deal. The science was capable of being made the ideal of a man's work, which would lead to better things all round. It was a most essential branch of medicine. He was delighted to think of their approbation, and that they would still entertain the same spirit of co-operation with him in the future.

Mr. G. W. Isaac spoke of Mr. Schacht as a pharmacist of the highest order, a good citizen, and a gentleman whom it was a privilege to know. He had given an immense amount of devotion, at the cost of much time and labour, to the cause of pharmacy.

Mr. B. Keen, Honorary Secretary of the Bristol Pharmaceutical Association, spoke of the alacrity with which all who had contributed to the testimonial had responded to his appeal. Looking through the Calendar of the Society he had found that there were only three others besides Mr. Schacht whose numbers in the examination list were units, and very few under 100. Mr. Schacht's name occurred four times in 1845 as a prize-man. He had not yet retired from active work, being still a member of the University College Council, and he was doing a great deal of work in enquiring about various schools and their endowments.

Mr. A. Warren having referred to Mr. Schacht's contagious spirit of hopefulness, many having been cheered by his kind words, the proceedings terminated with votes of thanks to the Chairman, and to Mr. Townsend.

Antipyrin in Labour.—Savitsky uses antipyrin as an obstetric anæsthetic, employing every two to six hours an enema containing 1 gramme of antipyrin, and 15 to 25 drops of tinct. opii. Ph. R. The pains are always relieved in fifteen or twenty minutes after the first dose; hæmorrhage is diminished, and no ill effects have been observed (*B. M. J.*, *Epit*, 2/96/10, after *Vratch*).

PROCEEDINGS UNDER THE PHARMACY ACT.

Illegal Sale of Powell's Balsam.

Pharmaceutical Society v. *John Dickinson.*

The further hearing of this case (see *ante*, p. 75), which was brought to recover a penalty under Section 15 of the Pharmacy Act, 1868, for selling poison, came on at the County Court, Durham, before His Honour Judge Meynell, on the 18th instant.

Mr. T. R. Grey appeared for the Council (instructed by Flux, Thompson, and Flux). Mr. Mawson represented the defendant.

Mr. Grey pointed out that the two witnesses called last time proved the receipt of the bottle, which contained the poison and the analysis.

His Honour: It was adjourned to prove the purchase, the case cannot be gone into again.

Arthur Foulds (examined by Mr. Grey): I live in Manchester, and was instructed to go to a shop in Chester-le-Street. It was a chemist's shop, the name on the window being Walton and Co. I asked defendant for a bottle of Powell's balsam of aniseed and he served me with it.

Cross-examined by Mr. Mawson: Had not been in the shop before or since. Made a purchase same day at Robinson's. Only purchased the one bottle of Powell's balsam on that day. Never saw defendant before that day.

Mr. Mawson: I will call the defendant.

Defendant (cross-examined by Mr. Mawson): I am employed at Walton's shop in Chester-le-Street and never saw the witness Foulds in my life. Have not sold Powell's balsam of aniseed for years.

Cross-examined by Mr. Grey: We keep Powell's balsam in our shop. The bottle of glycerin produced bears our label. On May 22 I was not in the shop. Mr. Walton engaged in the business. Could not have been sold by him, as he was away then. Since May 22 a registered man has been employed in the business.

His Honour: Are you employed in the shop now?

Defendant: Yes.

Cross-examination continued: Walton is not the owner of the business. I cannot say who is owner of the shop. Never sold a scheduled poison. Could not tell which poison he had sold.

His Honour: Do you remember being here last month?

Defendant: Yes.

His Honour: You then stated you did not remember having sold this bottle, has your memory improved since then?

Defendant: No.

His Honour: I find for the plaintiffs for the penalty claimed and costs.

FOREIGN NEWS.

Flower Cultivation on the Riviera.—According to Mr. L. J. Jerome, the British Consul at Nice, one of the most paying forms of agriculture on the Riviera is the cultivation of flowers for export, and for the perfumery factories at Grasse. In the last-named town 55,000 kilos. of violets, 14,000 kilos. of jonquils, 11,000 kilos. of roses, and 165,000 kilos. of orange blossoms were used in the manufacture of perfume in 1894, as against 50,000 kilos. of violets, 15,000 kilos. of jonquils, 9000 kilos. of roses, and 160,000 kilos. of orange blossoms in 1895, besides large quantities of lavender, jasmine, and other flowers, sixteen different kinds of flowers being cultivated for this purpose alone in the department. The lavender referred to is a semi-wild plant, found in large quantities in the mountains, especially near Sospel, Luceram, and Lantosque.

Decline of the Indian Opium Trade is so marked at Pakhoi, China, that the British Consul in that district considers the importation of the drug has only one more year of existence before it. In 1888, when the trade attained its maximum, the value of the opium imported was £102,000, but the amount has gradually diminished until last year it was valued at £12,000 only, and as the average annual decrease for the last five years has been £17,000, the estimate of the Consul would appear to be far from exaggerated. The total quantity of opium imported last year at Pakhoi was 19,600 lbs., as against 39,866 lbs. in 1894. It is noteworthy, however, that at Chefoo the 1895 import of Indian opium—60,480 lbs.—was the largest for several years past, consumers of the luxury apparently having had more money to spend than usual in indulging their taste. But the quantity of the native drug imported from Shanghai showed an even greater increase, having risen from 8624 lbs. in 1894 to 41,440 lbs. in 1895. The tendency to oust the Indian product is therefore only less pronounced at Chefoo than elsewhere in China. The total value of the opium imported at this centre last year was £46,622, as against £38,749 in 1894. At Wuhu the importation of Indian opium in 1895 showed a falling off of 13 per cent., the amount imported being 336,533 lbs., as against 385,746 lbs. in 1894. The value of the drug, however, increased considerably, the sterling value of last year's import exceeding that of 1894 by £14,413. Here again, the diminution in the importation was counterbalanced by a large increase in the supply of the native drug, 20,210 lbs. being brought from Szechuan and other native-producing centres, as against 9441 lbs. in 1894. The native article is found to be of ever improving quality, as well as cheaper. At Newchwang only two chests of Indian and a half picul (66⅔ lbs.) of Szechuan opium were imported, and they were all exported again.

PARLIAMENTARY NOTES AND NEWS.

Vaccination Commission.—The long-expected report of the Vaccination Commission was laid on the table of the House of Commons, in dummy, on Thursday, August 13. The document is a very bulky one, and it will not be issued to the public for some little time. The questions referred to the Commissioners are given below, and appended to each question is the answer in brief:—

(1) The effect of vaccination in reducing the prevalence of, and mortality from small pox?

(*Ans.*) The majority of the Commissioners find that vaccination has a marked effect in reducing the prevalence of small pox and mortality from the disease.

(2) What means, other than vaccination, can be used for diminishing the prevalence of small pox; and how far could such means be relied on in place of vaccination?

(*Ans.*) It is suggested that a complete system of notification, accompanied by immediate hospital isolation, would have a marked effect in diminishing the prevalence of the disease. Whilst such means could not be relied upon in the place of vaccination, they would constitute an important supplement to it.

(3) The objections made to vaccination on the ground of injurious effects alleged to result therefrom, and the nature and extent of any injurious effects which do, in fact, so result?

(*Ans.*) It is found that although some of the dangers said to attend vaccination are undoubtedly real and not inconsiderable in gross amount, yet when considered in relation to the extent of the vaccination work done they are insignificant.

(4.) Whether any, and, if so, what means should be adopted for preventing or lessening the ill effects, if any, resulting from vaccination; and whether, and, if so, by what means, vaccination with animal vaccine should be further facilitated as a part of public vaccination?

(*Ans.*) It is recommended that only calf lymph should be employed; that the age within which vaccination is obligatory should be six months (as in Scotland) instead of three, and that vaccination should be carried out at the child's house instead of at a vaccination station.

(5.) Whether any alterations should be made in the arrangements and proceedings for securing the performance of vaccination, and, in particular, in the provisions of the Vaccination Acts with respect to prosecutions for non-compliance with the law?

(*Ans.*) The opinion of the majority is that repeated penalties should not be enforced. Also that persons imprisoned should be treated as first-class misdemeanants, and that any statutory declaration by a parent that he objects to the operation should be a bar to compulsion.

Sir Guyer Hunter and Mr. Jonathan Hutchinson think that revaccination at the age of twelve ought to be made compulsory, and they are opposed to the relaxation of the law implied in the answer to question 5, being of opinion that parents or guardians refusing to allow vaccination should be compelled to attend before a magistrate who, however, should be permitted to accept a sworn deposition of conscientious objection and to abstain from the infliction of a fine. Mr. S. Whitbread and Mr. J. A. Bright, on the other hand, object to compulsory vaccination in any form, whilst Dr. W. J. Collins and Mr. J. A. Picton deny that there is any evidence whatever to warrant the inference that vaccination is the cause of the decrease of small-pox.

NOTES AND FORMULÆ.

Oil of Egg Yolk.

This oil, sometimes ordered on the Continent as an ingredient in ointments for chilblains, cracked nipples, and hæmorrhoids, is extracted from hard-boiled eggs by heat and pressure. It is limpid when warm, becoming turbid on cooling, with deposition of a semi-crystalline sediment containing, according to Lecanu, a cholesterin fusing at 145° C. The density of egg oil at 20° C. is ·915, it solidifies at 8 to 10° C., is soluble in ether, insoluble in alcohol, its saponification number is 185·2 to 186·7, and the iodine number 81·21 to 81·60. Colour reactions are difficult to read owing to the intense yellow tint of the oil (*Giornale di Farmacia e di Chimica*).

Preparation of Thyroid Capsules.

The following method is recommended by Vigier for the preparation of thyroid gland capsules. The gland is carefully dissected out and all fat and membrane removed. The gland substance is then beaten to a pulp and immediately mixed with borax or with wood charcoal. The mass so formed is weighed out into 10 centigramme portions, which are enclosed at once in capsules (*Journ. de Pharm. d'Anvers*).

Hair Tonic.

The following is recommended to prevent the falling-off of the hair:—Chlorhydrate of quinine, 4; tannin, 10; rectified spirit, 880; tincture of cantharides, 10; pure glycerin, 60; eau de Cologne, 40; vanillin, 1/10; sandal wood, crushed, 5 parts. Macerate for four days, then filter (*Pharm. Zeitsch. für Russ.*).

Tropacocaine as a Substitute for Cocaine.

On the grounds that tropacocaine is less than half as toxic as cocaine, while the anæsthesia it produces is as rapid and more lasting, Vamossy proposes to substitute the former for the latter in medical practice. He observes that tropacocaine gives rise to little or no mydriasis when employed in the eye. For general use he prescribes the following solution. Chlorhydrate of tropacocaine, 30 centigrammes; sodium chloride, 6 centigrammes; distilled water, 10 grammes (*Rev. de Thérap. Méd. Chirurg.*, lxiii., 188, after *Therap. Woch.*).

Alkalimetric Titration of Quinine.

In the *Analyst* (xxi., 241) A. H. Allen directs attention to the divergent behaviour of the salts of quinine with inorganic acids towards methyl orange. Thus the ordinary sulphate of quinine of commerce containing two molecules of the base to one of the acid, although practically neutral to brazilwood, cochineal and logwood, is strongly alkaline to methyl orange. The point of neutrality when titrating quinine with the first-named indicators is thus reached when the neutral sulphate is formed; but with methyl orange not until the acid sulphate results.

Ointment for Chapped Skin.

Woolfat, 3 ounces; glycerin, 4 drachms; boric acid, 1½ drachms; salol, 1 drachm; Hoffman's anodyne, 5 drachms; menthol, 15 grains; oil of citronella, 3 minims (*Journ. des Practs.*).

Laxative Powder for Children.

Sodium bicarborate, 3 drachms; powdered rhubarb, 2 ounces; sodium sulphate, 1 ounce; oil of peppermint, 20 minims. Half to one teaspoonful in the morning before breakfast (*Journ. de Méd. de Paris*).

NEW REMEDIES.

[The notes given under this heading embody recent suggestions in therapeutics. They cover both new drugs and preparations, and old ones under new aspects. The word "parts" is used to represent parts by weight, both for solids and liquids.]

Iodol in Laryngeal Ulceration.—In cases of laryngeal ulceration of tubercular origin, Hajek (*Therap. Woch.*) applies iodol directly to the parts. Its slight solubility allows the powder to adhere to the ulcerated surfaces, and it acts as a marked detergent; under its influence the ulcer assumes the appearance of a granular wound. As it adheres for three or four days to the surface, two insufflations a week will generally suffice (*Rev. de Therap.*, lxiii., 435).

Phenylchinoldine in Malarial Fever.—Phenylchinoldine, $C_3H_5(C_6H_5N)$, is brought forward as a remedy for malarial fever. It is given in doses of 10 to 20 centigrammes. It is obtained by the action of hydrochloric acid on a mixture of aniline acetophenone and aldehyde. The chlorhydrate of the base occurs in colourless, readily soluble crystals (*Bulletin Comm.*, xxiv., 273, after *Pharm. Reform*).

Further Report upon Tannalbin.—Already favourably reported on by Gottlieb, this combination of tannin with albumin has been further experimented with by Engel in forty cases of intestinal lesions, such as nephritic and tuberculous diarrhœa, and in cases of debility of convalescence. In all satisfactory results were obtained. It was given to adults in doses of 1 gramme, in a cachet, repeated twice to four times daily; to children half a gramme was given from once to three times in twenty-four hours; the drug was well tolerated in every case (*Nouv. Rem.*, xii., 400, after *Boln. Gerz. Botkina*).

Thiosinamine for Inoperable Tumours.—Sinclair Tousey, following Hebra and others, has experimented with thiosinamine as an injection into malignant tumours, and finds that as a palliative it gives good results (*Rev. de Thérap.*, lxiii., 413, after *New York Med. Journ.*)

Formalin in Dentistry.—Although formalin, according to Abraham, is not suitable for direct application to the tooth pulp either when healthy or irritated and inflamed by caries, for the after-treatment of the root canal after cautery of the pulp, for the preservation of a tooth with gangrenous pulp, and for the preparation of roots before affixing crowns, formalin has given excellent results. He applies it in the following manner:—A powder is made of calcium sulphate, 6 ounces; bichloride of mercury, 1 drachm, mixed finely: and a liquid consisting of sulphuric acid, 1 ounce; formalin, 3 ounces; distilled water, 3 ounces. A little of the powder is mixed on a glass plate with sufficient liquid to form a paste which, introduced into the previously-dried canal, solidifies in a few minutes. The crown can then be filled with any desired stopping (*Therapist*, vi., 50, after *Zahnartze Wochenblatt*).

Glutol in Veterinary Cases.—For an all-round veterinary work glutol seems to be excellently adapted since it is non-poisonous, so that animals are not affected by licking their wounds. It rapidly forms a protecting surface on the wound, obviating the necessity of a bandage, so often difficult to keep in position on an animal. Jess has employed it with success to broken knees in horses, as a dressing for surgical or accidental wounds in dogs. A great point in favour of glutol for animal use is that during the process of healing the wound does not itch, so that the "patients" do not irritate it by scratching or biting (*Therapist*, vi., 50, after *Berliner Thierartzl. Woch.*).

Ferropyrine in Chlorosis.—Deyle finds that ferropyrine acts more promptly in increasing the number of red blood corpuscles in cases of anæmia than any other iron compound; it does not in any way disturb the digestion, in fact, when prescribed with pepsin it exerts a beneficial effect in cases of dyspepsia. It has also given relief in neuralgias not due to anæmia, even intractable sciatica yielding to its influence. It was given in aqueous solution, a tablespoonful of a quarter to a half per cent. solution being taken three times daily (*Nouv. Rem.*, xii., 130, after *Med. Oborr.*).

CORRESPONDENCE.

All Articles, Letters, Notices, and Reports intended for publication in the Journal, Books for Review, and communications respecting Editorial matters generally must be Addressed "Editor, 17, Bloomsbury Square, London," and not in any case to individuals supposed to be connected with the Editorial Staff. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

Any Instructions from Members, Associates, and Students of the Pharmaceutical Society, with reference to the transmission of the Journal, should be sent to the Secretary — Mr. Richard Bremridge,— 17, Bloomsbury Square, London.

Business communications—including advertisements, orders for copies of the Journal, and instructions from Subscribers respecting transmission of same—must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London. Cheques and money orders should be made payable to "Street Brothers."

Correspondents who wish notice to be taken of their communications must write in ink, on one side of the paper only, and should authenticate the matter sent with their names and addresses—of course not necessarily for publication. No notice can be taken of anonymous communications.

Drawings for illustrations should be executed twice the desired size; clean, sharp lines being drawn with a pen and liquid Chinese ink. Shading by washes is inadmissible. Photographs can be utilised in certain cases.

Names and Formulæ should be written with extra care, all systematic names of plants and animals being underlined, and capital letters used to commence generic but not specific names.

Reprints of articles cannot be supplied unless authors communicate with the Editor before publication.

Japanese Fennel.

Sir,—I regret that I was not present when Mr. J. C. Umney's paper on "Japanese Fennel" was read at the recent meeting of the Pharmaceutical Conference, because "fennel" is a subject I have had in my thoughts for about a couple of years, and Mr. Umney may be able to clear up a little difficulty in connection therewith.

In 1879 (*Pharm. Journ.* [3], x., 262) Mr. E. M. Holmes mentioned a small variety of fennel fruit from Japan "with a taste at first strongly resembling that of anise," and ten years later Messrs. Schimmel and Co. reported (*Pharm. Journ.* [3], xx., 281) that under the name of "anise" they had met with a sample of Japanese fennel which, "although it had the aroma and taste of fennel, presented an extraordinary similarity to anise in the form and size of the grain." Now Mr. Umney brings to notice another specimen to which the words of Messrs. Schimmel and Co. appear to apply equally as well as to their own specimen, and which was described in a drug catalogue as "aniseeds." In the light of Mr. Holmes' description it seems not unlikely that some slight modification of the odour of the two commercial parcels of Japanese fennel may have helped to mislead those who handled them. It seems probable that such was the case in view of the following remarks on fennel by Messrs. C. Ford, Ho Kai, and W. E. Crow in their "Notes on Chinese Materia Medica" (*Pharm. Journ.* [3], xviii., 342). They say fennel is "known as *Hsaio hui hsiang* (*i.e.*, small *Hui hsiang*) to distinguish it from *Ta hui hsiang* (*i.e.*, large *Hui hsiang*), the star anise. . . . . The Chinese evidently observe some resemblance between the odour of fennel fruits and that of star anise, for in both the 'Pên ts'ao' and 'Chih wu' the fruits of *Illicium anisatum*, under the name of *pa chio hui hsiang* (*i.e.*, eight-cornered *Hui hsiang*), are described along with fennel. We are of opinion that Dr. Porter Smith is wrong in inferring (p. 18)* that the Chinese confound the fruits of *Pimpinella anisum* with those of *Fœniculum capillaceum*. The umbelliferous aniseeds are not known to the Chinese in Hong Kong. . . . . The only difference observed between the Szechuen variety of fennel fruit and Europœan grown samples is in the former containing such a large percentage of immature specimens." Perhaps these writers judged of the immaturity of the fruits solely by the size, but it is not unfair for us to assume, having the benefit of the knowledge imparted by other writers, that the Chinese fennel which they describe is the produce of a plant bearing smaller fruits than that with which we are familiar. If this assumption is correct, then it appears, as far as information goes at present, that Japanese and Chinese fennel agree in being smaller than Europœan fennel, and, judging from appearances alone, might at a casual glance be mistaken for anise. But how is the Chinese association of fennel and anise to be accounted for unless, as Messrs. Ford and Crow suggest, there is a similarity in odour? Mr. Holmes' museum specimen lends support to the idea of such a similarity; but Messrs. Schimmel and Co. and Mr. Umney appear to negative the idea, and distinctly give one to infer that the size and form are alone responsible for the confusion. It may appear preposterous to even hint that such experts should fail to detect the odour of anise in their specimens, and I would not venture to do so if it were not for the fact that the late Professor Maisch ('Organic Materia Medica,' 4th edition, p. 350), described the odour of fennel as being "anise like." It may be then, seeing that the odours are not clearly distinct for all persons, that a slightly more pronounced anise odour has contributed to the mistake of calling these two parcels "aniseeds."

My interest in fennel was aroused by having submitted to me, in March, 1894, a sample from a parcel of ten tons of aniseeds grown in Roumania. The fruit agreed in every particular as to form and structure with fennel; in size it was only about half as large, the average length being four millimetres, but its odour was decidedly anise-like. It could very easily be mistaken for aniseed.

It is plain that, actually or inferentially, there is associated with all the small fennel fruits to which I have alluded the suggestion of anise, and this fact, leaving out of account the individual variations of olfactory sensitiveness, prompts the question:—is there a variety of fennel having a small fruit and having a more pronounced anise odour than the larger kind usually found in commerce? It has been in the hope of explaining the occurrence of two specimens, so much alike in size and odour as Mr. Holmes' Japanese kind and mine from Roumania, in two so widely remote countries, that I have been on the alert to find other kinds of anise-like fennel. Mr. Umney's paper has given increased interest to the subject, but has not thrown much more light upon it. Perhaps he and Mr. Holmes will be able to do this when the fruits of the growing plants are examined.

Manchester, August 12, 1896. William Kirkby.

* 'Contributions towards the Materia Medica and Natural History of China,' F. Porter Smith, M.B., 1871.

The New Curriculum and the Jacob Bell Scholarships.

Sir,—It has struck me that under the new arrangement of the classes a little hardship has been put upon the Bell Scholars. We may take it as an axiom, I think, that the original idea was to enable an impecunious youth to fully qualify, *i.e.*, take the Minor and Major during the tenancy of the Scholarship. Now, however, that the curriculum is extended to one session and a half, and the Scholarship is only available for one session, this will not be possible, unless indeed a man takes both the elementary and advanced classes at once, and that would unfairly handicap him. What ought to be done, I should say, would be to increase the endowment by another £15, and extend the free course of tuition by another half session. Doubtless the necessary £1000 would soon be raised for the first needful point, and the Society could easily throw in the latter.

August 18, 1896. A Former Bell Scholar.

Mule Milk.

Sir,—A mule producing milk is of such rare occurrence that, as far as I can find out, no recorded analysis exists. A Kentucky mule at San Fernando (Trinidad, B.W.I.) has for some weeks past produced milk, yielding about five to six quarts nearly every day. The udders at times enlarged to a considerable size, and the animal seemed greatly relieved after being milked, and worked with greater cheerfulness.

A sample was procured for me by the Government Veterinary Surgeon, which on analysis gave the following results. For the sake of comparison the constituents of an average sample of cow's, ass's, and mare's milk are included.

	Mule.	Cow.	Ass.	Mare.
Specific gravity	1028	1028 / 1035		
Water	90·72	86·56	90·70	82·84
Total solids	9·28	13·44	9·30	17 16
Proteids	2·19	4·08	1·70	1·64
Fat	1·10	4·03	1·55	6·87
Milk sugar	5·50	4·60	5·80	8·65
Mineral salts	·49	·73	·10	
Cream	·50			

The above figures show how closely the milk of a mule resembles that of an ass, and differs entirely in composition from the milk of a cow or mare.

The milk is much more transparent than cow's milk; it has a faint milky odour, and tastes sweeter than usual. Under the microscope it resembles "separated milk." It decomposes less rapidly than cow's milk: the latter in this climate sours in six or eight hours, whereas the former remained sweet after standing two days in the creamometer. It coagulates slowly with alcohol and hydrochloric acid, and turns brown only on prolonged boiling with the latter. The ash contains a considerable quantity of phosphates and a trace of chlorides.

Port of Spain, Trinidad, July 30, 1896. W. H. Ince.

Oil of Rhodium.

Sir,—In case no one else draws your attention to the subject, I would mention that the statement made under "Answers to Queries," p. 156 of the *Pharm. Journ.* for this week in regard to ol. rhodii is not quite correct. The genuine oil obtained from the Canaries was distilled not from *Genista canariensis* (Leguminosæ), but from *Convolvulus floridus* and *C. scoparius* (Convolulaceæ). You will find an article on the subject, written after my visit to Teneriffe, in the *Kew Bulletin*, 1893, p. 133.

Royal Gardens, Kew, August 14, 1896. D. Morris, C.M.G., D.Sc.
Assistant Director.

*** Thanks are due to Mr. Morris for this correction, which has also been notified by Mr. E. M. Holmes.—[Ed. *Pharm. Journ.*]

Makers of Trusses.

Sir,—Can any reader of the Journal inform me if the Link Shell Truss Co. is still in existence, and what is its present address; if not, is there any person manufacturing their patent truss? What is the next best patent truss for femoral and scrotal hernia? Give maker's address.

August 13, 1896. "Boval."

PUBLISHERS' NOTICE.

COVERS FOR BINDING.

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ANSWERS TO QUERIES.

[*Queries addressed to the "Editorial Department*, 17, *Bloomsbury Square, W.C.," will be replied to in the Journal as early as possible after receipt, but the Editor cannot undertake to reply to them through the post, nor is it always possible to publish answers the same week. Questions on different subjects should be written on separate slips of paper, each of which should bear the sender's name or initials. Readers requiring working formulæ for special preparations, and intimating their wants to the Editor, will be assisted as far as may be practicable. The word "parts," when used in formulæ, invariably indicates parts by weight.*]

D. Dickinson.—*Rhus cotinus* (Anacardiaceæ).

T. H.—A cultivated species of *Veronica*, but material insufficien for determination of species.

"Studens."—Apply to your local bookseller, and please add your name when asking further questions.

A. Lander.—1. *Lycopodium clavatum.* 2. *L. selago.* 3. *L. alpinum.* 4. *Cochlearia officinalis.* 5. *Cryptogramma crispa.* 6. *Calluna vulgaris.*

Rat Poison.—The retail sale of arsenic or its preparations uncoloured is an offence under both the Arsenic Act and the Pharmacy Act. [*Reply to* A. R.]

Classification, Etc., of the Rhodophyceæ.—Agardh's 'Epicrises Floridearum,' and 'Florideernes Morphologi' are the best works on the Rhodophyceæ; the first is published in Latin and the second in Swedish. If these are not available, you might communicate with the Curator, Mr. E. M. Holmes. [*Reply to* H. H. Sturch.]

Linimentum Terebinthinæ, B.P.—If you follow the directions of the Pharmacopœia strictly you will obtain a perfect emulsion. As you speak of "shaking," you have probably been trying to mix the ingredients in a bottle. The official directions are to "rub these fluids together until they are thoroughly mixed." In this, as in other emulsions, the "rub" is truly the rub. A pestle and mortar should be used, the turpentine solution of camphor gradually added to the soap and water, previously mixed, with constant and continuous rubbing until a perfectly smooth emulsion results. [*Reply to* A. G. W.]

Histology of Drugs.—Moeller's 'Pharmakognostischer Atlas,' Vogl's 'Anatomischer Atlas zur Pharmakognosie,' and Tschirch and Oesterle's 'Anatomischer Atlas der Pharmakognosie' contain excellent illustrations of the kind you require. They are all in the Society's Library. Your letter conveys the impression, perhaps wrongly however, that you propose to prepare yourself for examination in your knowledge of the histology of drugs by the study of illustrations of specimens that may possibly be shown to you by the examiner. But this is a most objectionable method of dealing with the subject. You need not fear rejection because of inability to indicate specifically the exact source of any particular mounted specimen, so long as you can convince the examiner that your knowledge of the principles of histology is not merely superficial. Such knowledge of principles can only be gained by first acquiring a practical acquaintance with the essentials of vegetable histology and then intelligently following a systematic course of instruction, on the lines of the articles on "Practical Pharmacognosy," published in the *Pharmaceutical Journal* during 1894–95. [*Reply to* R. D.]

OBITUARY.

Morris.—On July 27, Henry C. Morris, Chemist and Druggist, of Leeds. Aged 32.

Waters.—On August 11, Alexander Waters, Chemist and Druggist, of Wick, N.B. Aged 63.

Ingram.—On August 13, at Nottingham, after two days' illness, Mr. D. M. Ingram, representative of Messrs. C. R. Harker Stagg and Morgan. Mr. Ingram had only lately been associated with this firm, but he was very well known in the North of England and Scotland, and his untimely decease will be much regretted by his many friends.

Bothamley.—On August 14, Valentine Bothamley, Chemist and Druggist, of Langley, near Oldbury. Aged 59.

Communications, Letters, etc., have been received from Messrs. Atkinson, Bird, Bokenham, Britton, Cocks, Dawson, Dixon, Duncan, Durrant, Evans, Galloway, Gare, Guild, Holmes, Keen, Kirkby, Knaggs, Lesher, Mackenzie, McFall, Merson, Morris, Nathan, Proctor, Robertson, Shuttleworth, Thompson, Turner.

ROYAL COLLEGE OF PHYSICIANS

"THE MONTH."

Copper in Vegetable Substances. In view of the great differences between the results obtained by Dr. Victor Vedrödi (see *Pharm. Journ.*, lvi., 441) and those of Dr. Lehmann and other chemists in the determination of copper in organic substances, Dr. Vedrödi has made further experiments to ascertain the reason of these discrepancies. In the first instance the method followed by the author of mineralising the vegetable substances in a muffle furnace was compared with Lehmann's method of treatment with sulphuric acid with the help of nitric acid. In both cases the copper was precipitated as sulphide, and in testing Lehmann's process the influence of silica was also ascertained. In three series of experiments it is claimed that the results show that there is a close agreement in both methods if the copper is subsequently precipitated as sulphide, and that it is immaterial whether the silica is separated or not before precipitating with sulphuretted hydrogen. Lehmann's method of mineralising the substance is, however, much quicker than the author's, although requiring more attention during the operation. It is also possible to determine the copper colorimetrically either with ammonia or, in the case of small quantities of copper, with potassium ferrocyanide, with a fair degree of accuracy when dealing with pure copper solutions, or when the copper has been first precipitated as sulphide from the ashes of vegetable substances, taking *Paprica* for the purpose of experiment. When, however, as in Lehmann's method, the ash was obtained by treatment of the substance with sulphuric acid and the copper determined colorimetrically with ammonia, there was a separation of a yellowish-white and gelatinous precipitate, consisting of silica coloured with iron oxide. The solution when compared with a standard copper solution, showed a considerably less amount of copper than was known to be actually present, and after a short time the precipitate had absorbed the colour from the solution completely. The exact determination of copper by this method is therefore impossible, and explains the great difference between his results and Lehmann's as to the stated amount of copper in vegetable substances. The colorimetric determination of copper is therefore only to be depended upon when the copper solution is sufficiently pure, and it is absolutely necessary first to separate the silica and iron oxide that always occur in vegetable substances. From the circumstance that not only Lehmann, but all other chemists have found such a small amount of copper in vegetable substances must be ascribed to the same or to a similar source of error.—*Chem. Zeit.*, xx., 584.

Quercetin in Onion-Skins. A. G. Perkin and J. J. Hummel have isolated the colouring matter in the outer skins of onion bulbs, and they have proved conclusively that it is quercetin. It is customary to use these skins for dyeing Easter eggs, and the authors found that it is possible to dye textile materials in the same manner, the colouring power of the onion-skins being quite equal to that of old fustic and quercitron bark. With an aluminium mordant it dyed calico a full bright yellow, and with iron a dark greenish olive. Samples of wool mordanted with chromium, aluminium, tin or iron, were dyed brownish-olive, yellow, bright orange, or greenish olive respectively. It is interesting to note with regard to the quercetin group of compounds, that whereas fisetin is only known to exist in young fustic (*Rhus cotinus*), luteolin in weld (*Reseda luteola*), morin in old fustic and jackwood (*Morus tinctoria* and *Artocarpus integrifolia*), and rhamnetin and rhamnazin in Persian berries, quercetin has been found in quercitron bark, Persian berries, catechu, tea-leaves, apple-tree bark, horse-chestnut bark, and numerous other natural products, the outer scales of the onion bulb being the latest discovered source of the compound.—*Journ. Chem. Soc.*, lxix., 1295.

Work on Colouring Matters. The yellow colouring matter contained in the bark of *Myrica nagi*, for which the name "myricetin" is proposed by A. G. Perkin and J. J. Hummel, is most probably a hydroxy-quercetin. The yellow needles closely resemble quercetin, have the formula $C_{15}H_{10}O_8$, and yield compounds with mineral acids, which are decomposed by water into the free acid and colouring matter. Sicilian sumach, the dried and powdered leaves of *Rhus coriaria*, is found by Perkin and G. Y. Allen to contain the same colouring matter, together with some quantity of free gallic acid. The wood of *Quebracho colorado* also contains a yellow colouring matter, $C_{15}H_{10}O_6$, and Perkin and O. Gunnell consider that the needles in which this occurs are identical with fisetin, the colouring matter of young fustic (*Rhus cotinus*). In addition, they found ellagic acid and a considerable quantity of gallic acid present, both compounds having apparently been formed during the isolation of the fisetin.—*Proc. Chem. Soc.*, 168, pp. 145, 157, and 158.

Atisine. This alkaloid, which is contained in the roots of the non-toxic *Aconitum heterophyllum*, has been investigated by H. A. D. Jowett. The formula adopted for the compound is $C_{22}H_{31}NO_2$. The base could only be obtained as a colourless varnish, soluble in alcohol, ether, or chloroform, slightly soluble in water, and insoluble in petroleum ether. Its alcoholic solution is lævo-rotatory, $[\alpha]_D = -19°6$. Atisine hydrochloride, hydrobromide, hydriodide, nitrate and platinichloride were obtained in crystalline form, but the aurichloride could only be obtained as an amorphous powder. Dr. Cash has made a preliminary examination of the physiological action of atisine nitrate (m. p., 252°, corr.), and finds that the alkaloid is non-toxic, whilst its action somewhat resembles that of aconine. —*Proc. Chem. Soc.*, 168, p. 158.

Localisation of Active Principles. In a series of articles in Morot's *Journal de Botanique* (1896), M. L. Sauvan gives the result of his observations on the distribution of a number of alkaloids and glucosides in the living plant. Strychnine occurs in *Strychnus nux-vomica* and in other species of the genus, in the cortical parenchyma and liber of the stem and root, both in old and in young plants; in the parenchyma of the leaves and liber of the veins; and in all the cells, both of the embryo and of the endosperm, in the ripe seed, always in their interior. Brucine accompanies strychnine in all the organs where it occurs, in the various species of *Strychnos;* it is also present, in smaller quantities, in the epiderm of the leaf and of the young stem. Curarine is found, in various species of *Strychnos*, in the interior of the cortical parenchymatous cells, and in those of the liber, in the root and stem; also in the epiderm of the young stem, and in the cells of the parenchyma, liber, and epiderm of the leaf. The localisation of gelsemine in *Gelsemium sempervirens* was found to be in the cortical parenchyma and liber of the root, stem, leaf-stalk, and leaf, also in the pith of the stem. Berberine occurs, in *Berberis vulgaris*, in the interior of the cells of the cortical parenchyma, liber, cambium, and medullary rays, and in the interior and the walls of the xylem vessels in the root, in the interior of the cells of the cortical parenchyma, liber, and cambium of the stem; and in all the cells of the embryo and endosperm. The taxine of the yew is found in the parenchymatous and pericyclic cells of the root, but not in the sieve-tubes; in the same elements and also in the pith of the stem; in the epiderm and the pericyclic

and liber-cells of the leaf; in all the cells of the embryo and endosperm of the seed. Helleborine and helleboreine occur in the same organs, but not usually in the same cells of various species of *Helleborus*. *H. viridis* is the richest in helleborine; *H. niger* in helleboreine. Daphnine occurs especially abundantly in the fruit of *Daphne alpina* and *D. gnidium*.

Lunasia Amara. Professor Plugge has recently concluded his investigations of the bark of this tree, which is also known as *Rabelaisia philippinensis*, Planch. (Rutaceæ). It is used by the Negritos of the island of Luzon as an arrow poison. He finds that it contains a very toxic glucoside, acting on the heart like digitalin, and of which 0·01 gr. kills a frog. The glucoside is soluble in water and in alcohol, and less so in chloroform, but is difficult to extract by the latter solvent. The chloroformic solution can, however, be obtained colourless, and gives, on evaporation in a desiccator, crystals which deliquesce on exposure to the air. Dr. Plugge gives no less than nine reactions afforded by the glucoside, but does not state whether he considers any or all of them as characteristic. —*Archives de Pharmacodynamie*, ii., 537-555.

Formaldehyde as a Preservative. F. Lester finds that formaldehyde is a satisfactory preservative for mucilages and pastes. Mucilage of acacia, U.S.P., to which 1 per cent. of formaldehyde was added, showed no signs of fermentation after standing in a warm place for two months. Equally good results were obtained with the following pastes:—(1) Flour, 8 oz.; water, 4 pints; alum, ½ oz.; formaldehyde (40 per cent. solution), ½ oz. (2) Gelatin, 1 oz.; flour, 4 oz.; water, 3 pints; formaldehyde, ⅜ oz. (3) Starch, 2 oz.; water, 16 oz.; formaldehyde, ¼ oz. (4) Dextrin, 4 oz.; water, *q.s.*; flour paste as No. 1, 8 oz.; formaldehyde, ½ oz. In each case the formaldehyde is added after cooling the mixture. — *Western Druggist.*

Albumin in Pepsin Testing. J. M. Lear is of opinion that, in testing pepsin, the use of albumin coagulated in the mass and then finely comminuted with a sieve must be wholly abandoned, because in that lies the cause of the greatest error of the test. He advances evidence in favour of this view, in the form of figures showing that the percentage of water in egg albumin varies considerably, both before and after coagulation. It thus appears possible to have a variation in the results obtained with the same sample of pepsin, of nearly one-tenth, or from 2716 to 3000 parts digested. Even while weighing the freshly coagulated albumin, loss of moisture takes place, increasing with lapse of time, so that the same investigator —working with the same sample of pepsin and coagulated albumin from the same egg—may obtain varying results, according as the tests are made with albumin weighed five, ten, or fifteen minutes after passing the sieve. An amount of albumin weighing 10 Gm., after standing five minutes, was found to represent 10·027 Gm., weighed without loss of moisture; the same weight after ten minutes represented 10·05 Gm., and after fifteen minutes 10·069 Gm., of the freshly coagulated and comminuted albumin. Assuming the pepsin examined to be of the U.S.P. standard (1·3000), the results thus obtained after five, ten, and fifteen minutes would be equal to 1:2992, 1:2985, and 1:2979 respectively, whilst with albumin weighed thirty minutes after passing the sieve, the digestive power of the pepsin would be represented as 1:2961 only. Further mischief is caused by the outer portion of coagulated albumin becoming quite hard and relatively insoluble after exposure for awhile to the air. In order to remedy this state of affairs the author suggests the adoption of Eccles and Bartley's method, the results of which he finds to be very consistent in practice. In this process the albumin is coagulated in solution, the whites of several eggs being well mixed, and (1) 25 Gm. of the mixture made up to 250 C.c. by the addition of distilled water. Mix well, and boil the solution for five minutes; then cool, again make up to 250 C.c. with water, and strain if necessary. (2) Dissolve 1 Gm. of the pepsin to be tested in 25 C.c. of water, add 2 C.c. of dilute hydrochloric acid (U.S.P.), and then enough water to make up the solution to 50 C.c. (3) Heat 50 C.c. of the albumin solution on a water-bath to 40 C., add to this 2 C.c. of dilute hydrochloric acid and 0·5 to 5 C.c. of the pepsin solution. Note the time, and then maintain the temperature at from 38° to 40° C. Determine the end of the reaction by removing a few drops of the solution, at intervals of ten minutes, and floating upon pure nitric acid in a test-tube, noting the time when the cloudiness produced by the action of the nitric acid corresponds to that similarly produced in a 0·25 per cent. standard solution of albumin.—*Bulletin of Pharmacy*, x., 298.

Effects of Molecular Bombardment. Some years ago W. Crookes published the fact that diamonds phosphoresce of various colours when submitted to molecular bombardment in a vacuum tube under the influence of the secondary current from an induction coil, and it was also observed that the diamonds became discoloured under this treatment, whilst in course of time they became black on the surface. This superficial blackening cannot be removed by ordinary cleaning methods, though polishing with diamond powder removes the discoloured layer. Becquerel having shown that long digestion of graphite in a warm mixture of potassium chlorate and strong nitric acid converts it into graphitic oxide, while diamond remains unaffected, some discoloured stones from Crookes' experiments were subjected to this treatment on the supposition that the superficial blackening might be due to conversion of diamond into graphite. This was proved to be the case, the whole of the black stain being removed from diamonds that had been specially bombarded in a vacuum tube for five hours, after digestion in the acid mixture for three days, whilst comparison of the stones with similar ones that had not been darkened seemed to show that the cleaned specimens had acquired extra brilliancy. A curious fact is that some of the historic specimens, preserved in a vacuum tube, appear less dark than they were some years ago, so that it is just possible the graphite formed may be ultimately re-converted into diamond. —*Chemical News*, lxxiv., 39.

Low Temperature Research. K. Olszewski has failed to liquefy helium, and is of opinion that its boiling point lies below −264° C., at least twenty degrees lower than the value he has found for the boiling point of hydrogen. He points out, however, that if the boiling point of a gas be taken as a simple function of its density, helium, which, according to Ramsay's determination, has a density of 2·133, more than double that of hydrogen, should liquefy at a much higher temperature. Possibly the anomalous condition of argon and helium in this respect—since both gases have lower boiling points than might be anticipated—may be due to their molecular structure being monatomic. Liquid air was employed by Olszewski to obtain the low temperatures required in his experiments, and in this connection he flatly contradicts Dewar's statement that air solidifies as such, the solid product containing a slightly smaller percentage of nitrogen than is present in the atmosphere. In Olszewski's experiments the nitrogen alone solidified; liquid oxygen did not solidify even when boiling under a pressure of two millimetres of mercury. He concludes that liquid air is a much more efficient cooling agent than liquid oxygen.—*Nature*, liv., 377.

Electrolytic Determination of Metals.

H. H. Nicholson and S. Avery, who have been investigating the electrolytic deportment of metals since 1892, now publish some additional results. They have obtained the current from a number of cells of the Grove-Tyndall form, controlled it by means of a rheostat-box, and determined the ampèrage by means of a "Weston" volt-meter, whilst the metals were deposited in platinum dishes of 300 C.c. capacity. Iron was quantitatively determined by adding tartaric acid solution to ferrous sulphate solution, diluting and rendering strongly alkaline with ammonia, then passing a current of 0·115 ampère and 4 volts for 6 hours. Of 0·0477 Gm. iron taken, 0·0476 Gm. was thus found. On dissolving the precipitate and oxidising, the resulting iron oxide corresponded in weight to 0·0465 Gm. of iron. A trace of carbon present evidently compensated for the weight of the unprecipitated iron. Carbon was also precipitated on electrolysing iron in neutral ammonium tartrate solutions and in sodium tartrate solutions, and in no case was it possible to obtain a precipitate free from carbon when organic matter was present, except in the case of formates and oxalates. Stronger currents cause an increased deposition of carbon, and the presence of borax facilitates the precipitation of iron in ammonium oxalate solutions. Nickel was easily determined by electrolysis, no carbon being deposited in any case. Difficulties occur in the case of zinc, but by adding formic acid to a solution of zinc sulphate, and partially neutralising with sodium carbonate, then diluting and passing a current of 0·02 ampère for 3 hours, a satisfactory result was obtained, 0·0603 Gm. of zinc being found when 0·0611 Gm. had been taken. A considerable variation of the current is allowable in this case, but the method is not suitable in the presence of metals of the hydrogen sulphide group, or iron, nickel, and cobalt.—*Journ. Amer. Chem. Soc.*, xviii., No. 7.

Cedrene and Santalal.

A. C. Chapman and H. E. Burgess have investigated the chemical properties of cedrene and compared it with the hydrocarbon—with which it is said to be identical—obtained by the action of phosphorus pentoxide on santalal. The cedrene was obtained from cedar wood oil by fractional distillation under reduced pressure; its boiling point (corr.) was 261°–262°, its density at 15°/15° was 0 9359, and it produced a lævo-rotation of 60° (in 100 M.m. tube). The santalal was obtained from santal-wood oil by fractional distillation; its boiling point was 301°–306°, its density was 0·9793, and its specific rotatory power at 27° was −14°42′ for sodium light. The general properties of santalal are those of an aldehyde, and on oxidation it yielded santalenic acid, which crystallised in thin, pearly plates. By treatment with phosphorus pentoxide the hydrocarbon $C_{15}H_{22}$ was prepared from santalal. This hydrocarbon resembled cedrene in being unsaturated and combining directly with hydrogen chloride and bromide, though no definite compound could be isolated in either case. Both yielded negative results with the oxides of nitrogen and with nitrosyl chloride. The hydrocarbon, however, though very similar to cedrene, is not identical with it. Its boiling point is 140°–145°, density 0·9359, and it produces a dextro-rotation of 5°45′.—*Proc. Chem. Soc.*, 168, p. 140.

A Cellulose Filter.

H. Potterin finds that the expensive and fragile biscuit porcelain tubes in the Pasteur and other filters may, with advantage, be replaced by filtering media prepared from cellulose. Fibres of the latter are finely powdered and sifted, then suspended in water so as to form a paste which, when slowly dried, forms plates some millimetres thick. These plates are very efficacious as filters and are so inexpensive that it is a cheaper matter to replace them with new ones than it is to clean porcelain tubes.—*Comp. rend.*, cxxiii., 263.

Varieties of Cedar.

Pharmacists are chiefly interested in cedar on account of the oil which is often used to keep off midges and other insects in summer. It is not generally known that the term cedar in commerce is a generic one. Mr. Hart gives a list of no less than eleven trees which bear the name of cedar. The pencil cedar is, strictly speaking, *Juniperus virginiana*, but the *J. bermudiana* is also used for the same purpose, the wood of the two trees being practically indistinguishable. The cedar of Lebanon, *Cedrus libani*, Barrel, and its two varieties, the African cedar, *C. atlantica*, Manetti, and the Indian cedar or deodar, *C. deodara*, Loud., do not appear to be distilled for oil. Other trees known as cedars are the West Indian white cedar, *Tecoma leucoxylon*, Mart.; the American red cedar, *Thuja occidentalis*, Linn.; the Californian white cedar, *Libocedrus decurrens*, Torr.; the New Zealand cedar, *Libocedrus bidwillii*, Hook., the Australian red cedar, *Cedrela toona*, Roxb., and the West India cedar, *Cedrela odorata*, Linn. The last is of interest as being the wood of which cigar boxes are made. It is also largely used for cabinets, wardrobes, etc., in the West Indies, since insects have a strong dislike both to the odour and taste of the wood. It would seem, therefore, that the volatile oil, of which Messrs. Schimmel obtained 3 per cent., would be more valuable than that of *Juniperus virginiana* as an insectifuge. The waste wood from the manufacture of cigar boxes could easily be utilised for this purpose. The oil has a specific gravity 0·915, and boils between 265° and 270°, and has an optical rotation of 5°·053 in 100 M.m. tube.—*Bull. Bot. Gardens, Trinidad*, July, 181.

Resin of Podophyllum.

H. J. Lohman, in a paper on podophyllum and its resin, refers to the U.S. Pharmacopœia description of resin of podophyllum. This is to the effect that it is a resinous precipitate of the fluid extract of *Podophyllum peltatum*, obtained by means of water acidulated with hydrochloric acid Lohman observes that the product so obtained should be an amorphous light-brown powder, whereas the U.S.P. allows a greenish-yellow or yellowish-green colour. Such allowances, he thinks, ought not to be made, as the difference in colour is due to the use of solution of alum as the precipitating agent. This results in a great yield, and the powder possesses a higher specific gravity than when the acid process is followed. It must also be administered in a larger dose, and then often causes griping, whilst it has less cathartic power than the acid podophyllin. With regard to galenical preparations of podophyllum, the author points out that podophyllin is not found in the fresh drug, but develops after drying, and does not reach its maximum until the dried podophyllum is at least two years old. If, therefore, podophyllin is to be regarded as the principle of chief importance in galenical preparations, such preparations should only be prepared from the properly seasoned drug.—*Merck's Report*, v., 353.

Rum Aroma.

Since the discovery by Mr. Greg that the aroma of rum depends largely upon the treatment of cane juice in the boiling house and the action of a particular kind of bottom yeast, Mr. Hart, the enterprising Curator of the Trinidad Botanic Gardens, has recommended the trial of "No. 18" yeast to the cane growers in that island, with the view of competing with the finest qualities of Jamaica rum. Evidently some little care in manipulation will be required, since the ferment is of very rapid growth, forming in forty-eight hours the maximum amount of alcohol that it is possible to obtain, or even in less time under certain conditions.—*Bull. Bot. Gardens, Trinidad*, July, 161.

Winter-Starch. Herr O. Rosenberg states that in the perennial parts of many herbaceous plants, such as *Scrophularia nodosa* and *Spiræa ulmaria*, an increase of starch takes place in the winter, as has already been shown to be the case in many woody plants. This increase cannot be due directly to assimilation, since the leaves are entirely wanting and the buds inactive. The amount of starch in the various parts of the rhizome in these plants was found to vary greatly from month to month, decreasing in some organs, while it increases in others. In other plants, for example, *Potentilla argentea*, *Plantago major*, and *Hepatica triloba*, the amount of starch in the underground organs decreases, or it may entirely disappear between November and April.—*Botanisches Centralblatt*, lxvi., 337.

Lignification of the Cell-Wall in Plants. From observations made by Herr H. C. Schellenberg on a number of woody plants, he has come to the conclusion that the strength of different kinds of woods is not dependent, in the first place, on the degree of lignification of the cell-walls, nor does the lignification determine the extensibility or the power of absorption of the wood. The lignification invariably takes place while the cell still contains protoplasm; that is, is still living. When the cell is dead the process ceases. Cell-division can take place only so long as the cell-wall is not lignified; callus also is formed only in unlignified cells; no increase of surface ensues after the membrane is once lignified. The author considers the purpose of lignification to be not the conduction of water nor increase of firmness, but the stoppage of growth in order that the part of the plant may permanently retain the form it has acquired.—*Pringsheim's Jahrbuch*, xxix., 237.

A Curious Rose. E. S. Bastin describes a rose in which the sepals, instead of being united at the base into a tube, were all distinct and inserted on the thalamus. They were as long as if the whole tubular portion had separated into five parts to its base, and were also more foliaceous than usual. Petals, stamens, and pistils were numerous and of the usual shape, but they were all inserted on a convex receptacle instead of a hollow or tubular one, as in the ordinary flower. It is suggested that this is a case of atavism, pointing to the conclusion that the remote ancestors of the rose had all the floral organs distinct and inserted on a convex receptacle, whilst also demonstrating the nature of the lower or tubular portion of the flower. This is held to confirm the view usually held by American botanists—that the exterior portion of the flower, is adnate calyx, and the inner or lining portion the thalamus or receptacle, on the surface and margin of which are borne the pistils stamens, and petals.—*Amer. Journ. Pharm.*, lxviii., 430.

Xanthophyll. Molisch has published a method of exhibiting xanthophyll crystallised in leaves after extracting the chlorophyll. This is done by digesting fresh green leaves or small pieces of them in 40 per cent. alcohol, which contains 20 per cent. by weight of KOH. In this liquid they remain protected from light for several days, until all the chlorophyll is extracted. To prevent absorption of CO_2 this should be done in glass jars with well-fitting stoppers. The potash is washed out for several hours with distilled water, and bits of the leaves then permanently mounted in pure glycerin. The xanthophyll is found crystallised in almost every previously chlorophyllous cell. The author includes xanthophyll as well as chrysophyll, etiolin, phycoxanthin, etc., in the carotin group. He proposes to use the word carotin in a generic sense for all the yellow and orange red crystals of the leaf obtained by the method described.—*Bot. Gaz.*, July, 1896, p. 66.

Heat of Flowers. Herr G. Kraus has investigated the extent and purpose of the rise of temperature at the time of flowering within the spathe of various species of Acaceæ, Cycadeæ, and Palmæ. In *Ceratozamia longifolia* he found this elevation to take place only in the daytime, the maximum attained being 38°·5 C., or 11°·7 above that of the air. Similar results were obtained with *Macrozamia*. In the Acaceæ examined the period of maximum elevation is more variable, but it is never in the night. In this order the seat of the elevation of temperature is not the reproductive organs themselves, but the club-shaped appendix to the inflorescence, and it is accompanied by a rapid consumption of starch and sugar. All the plants in which this phenomenon occurs are entomophilous, and Dr. Stahl sees in it a contrivance for attracting insects to assist in pollination.—*Annales Jard. Bot. Buitenzorg*, 1896, p. 217.

Bacteriosis of Carnations. In the *Bulletin*, No. 59, of the Agricultural Experiment Station of Purdue University, Professor J. C. Arthur and Mr. H. L. Bolley trace this common disease to the attacks of a schizomycete, which they name *Bacterium dianthi*, which enters the tissues of the plant through the stomates or through punctures caused by insects. It appears usually to attack the garden carnation only, but it can be transferred also to the wild form, *Dianthus caryophyllus*, and to other wild species of the genus, *D. plumarius*, *japonicus*, *chinensis*, and *barbatus*, but not to plants belonging to other natural orders.

Frugivorous Bats. Mr. Hart reports that bats cause considerable damage to fruit trees by taking away tea, coffee, and other fruits, and invariably choosing the best and ripest. Under their feeding place, which is generally the underside of some branch of a tree, there is frequently found a small heap of fruits, and advantage is taken of this peculiarity to secure seeds of tall trees from which seeds are not easily obtained otherwise. Early in the morning, before the heaps are dispersed by other animals, rare seeds and fruits may often be obtained in this way. The seeds are often brought a mile from the place where they are found.—*Bull. Bot. Gardens, Trinidad*, July, 166.

New Galvanic Cell. A new cell for the production of electricity as a direct result of the consumption of carbon has been devised by Dr. W. W. Jacques. A carbon rod or cylinder is suspended in an iron pot containing caustic soda, the rod and the pot therefore constituting the poles. The cell is placed in a suitable furnace, so that the caustic soda can be brought to a temperature of 400°-500° C., and air is then forced through the soda by means of an air-pump. Oxygen is taken up from the air, and attacks the carbon, which is gradually consumed, an electric current being produced as a result of the action. The efficiency of the cell is said to be about eighty-five to ninety per cent. Commercial caustic soda may be used, and gas-carbon or charcoal will serve for the rod without special treatment.—*Engineering Magazine*, July, 1896.

Photographic Flashlight Powder. At the Antwerp section of the Belgian Photographic Society, it was stated by M. Ommeganck that a satisfactory flashlight powder can be prepared by well rubbing together in a mortar five parts of magnesium dust, three parts of aluminium dust, and one part of red or amorphous phosphorus. This preparation is said to give a more rapid flash than simple magnesium or aluminium dust, whilst free from the danger attending the use of explosive mixtures containing potassium chlorate.—*Amateur Photographer* xxiv., 146.

AMERICAN PHARMACEUTICAL ASSOCIATION.

MEETING AT MONTREAL.

(*Specially Reported for the Pharmaceutical Journal.*)

The forty-fourth annual meeting of the American Pharmaceutical Association began its labours on Wednesday, August 12, by a session of the Council at the Windsor Hotel, Montreal. Subsequently, at 3.30 o'clock in the afternoon some two hundred and fifty delegates responded to the rap of the gavel, and gave attention to the call for business by President J. M. Good.

The attendance, though not equal to anticipation, was yet satisfactory, in view of the protracted period of intense heat prevailing over the Continent, which has rendered travel a burden, attended with danger in some cases. The scientific pharmaceutical world of America was well represented, the following well-known faces being seen in the assembly :—

Professor Prescott, Ann Arbor, Mich.; Hy. Trimble, Philadelphia; G. W. Kennedy, Pottsville; H. H. Rusby, N.Y.; J. P. Remington, Philadelphia; A. H. Mason, N.Y.; J. H. Beal, Scio, Ohio; L. E. Sayer, Lawrence; C. A. Mayo, N.Y.; H. W. Schimpf, N.Y.; T. C. Cook, N.Y.; Professor Wm. Saunders, Ottawa; J. M. Good, St. Louis; E. L. Patch, Boston; S. A. D. Sheppard, Boston; G. T. Seabury, N.Y.; F. H. Butler, Lowell; Chas. Holzhauer, Newark, U.S.; Thompson Washington, D.C.; A. B. Husted, Albany; S. P. Watson, Atlanta; Jacob Betzler, Newark; C. L. Diehl, St. Louis; Chas. T. P. Fennell, Cincinnati; Dr. Stewart, Detroit; C. E. Dohme, Baltimore.

The Association was welcomed by Messrs. R. W. Williams and W. H. Chapman, Presidents respectively of the Quebec Pharmaceutical

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Association and the Montreal College of Pharmacy. These gentlemen, in short but happily-worded speeches, tendered the hospitality of the premier city of the Dominion, promising that, while attending to the weightier matters which had called them together, no effort would be spared to make the remembrance of the Montreal visit linger long in the memory.

The President called on Prof. Patch, of Boston, who responded in a happy manner, admitting that, though only just arrived, they had found that all the good people did not live south of the line, even though they might have a monopoly of boy orators, Coxey armies, free silverites, and faddists in general.

Vice-President Charles E. Dohme was called to the Chair, and President Good read his address, as follows :—

President's Address.

We meet together here in the beautiful city of Montreal—a city so rich in historical associations—under favourable auspices, I am sure. Familiar faces, our friends, our own members, greet us as we step over the boundary line, and assure us that the American Pharmaceutical Association is still within its home limits. Those of you who think the Rio Grande and the St. Lawrence confine all there is of political, social, or industrial importance on the continent of America, are guilty of excusable vanity, to be sure; but I suspect you will go home with a different impression.

With our cousins here we have many good things in common; but, unfortunately, the trade between New York and Quebec is not under control of inter-state law. Speed the time when it shall be. Until such is the order, let us advocate a rational policy of reciprocity for the regulation of our commercial relations. Nations, like individuals, are selfish. They struggle alike to advance their own interests. While we all, in theory, subscribe to the sentiments of universal brotherhood, and the "greatest good to the greatest number," yet no one people can advance on that line much more rapidly than the balance of the race. The danger lies in the fact that others, in practice will, for their own benefit, take advantage of any beautiful general theories that we seek to reduce to practice. Self-interest asserts itself, and the proverb, "Charity begins at home," is likely to be quoted; but whether under the "British flag," or the "Stars and stripes," the stupendous march of the Anglo-Saxon race "is a most striking fact," and we are here in Canada to emphasise our oneness, not any trifling dissimilarities.

Our annual coming together is always rightfully regarded as a red-letter period in the history of our Association. The closing administration gives an account of itself, and the new one is inaugurated. The work mapped out for us, at Denver, has given us a busy year. There were more subjects of national importance claiming our attention than is usual within a like period of time. While they have not all been brought to a complete and satisfactory issue, yet, withal, the results are gratifying.

Army, Navy, and Marine Hospital Science.

Work well begun should be prosecuted to a successful end. Ultimate triumph is much, when it means the correction of long-established, organised wrong, such as has been the order in the Army, Navy, and Marine Hospital service.

Our Committee on the status of pharmacists in these branches of the Government service, under the leadership of Dr. George F. Payne, of Atlanta, Ga., has proven itself an energetic and efficient

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one. Obstacles in the way of positive advance appear unexpectedly, when we find two divisions of a service jealously watching each other.

The Navy department does not seem to be able to solve the problem of how to make the "Line" and the "Staff" work together harmoniously for the good of the service. Those in the "line of succession" to the command of the ship are accused of being ungracious and inconsiderate. We have no interest in the quarrel, further than it affects the unfortunate apothecary. We hope our Committee will be able to steer its course so as to avoid Scylla, on the one hand, and Charybdis on the other, and that pharmacists in the employ of our Government may be ranked according to their required accomplishments. The Government of the United States treats its servants ordinarily with consideration and justice. It cannot afford to be less so than are other civilised nations. It ought not to be difficult to convince our legislators that, if a man be possessed of a fair knowledge of materia medica, therapeutics, and minor surgery, and be able, during the temporary absence of the medical officer, to perform his duties, he may be justly entitled to rank with the "Sergeant-Major," and receive the same compensation. As much as this our Committee has asked. In the Navy we find the rank and pay of the apothecary to be below that of the sailmakers and carpenters. I do not wish to anticipate the report of our Committee, but I express the hope that, when it furnishes its work, there will be an improvement in the status of the apothecary in our military service.

Weights and Measures.

Probably the most important special committee working during the past year was the one appointed on "Weights and Measures" with instructions to co-operate with the American Metrological Society, and the other societies, in petitioning Congress to pass a law making the use of the "Metric System" compulsory at an early date, in all "Transactions where weights or measures, or both, are used." That they almost succeeded is a fact probably well known to all of you. That they did not succeed absolutely is no cause for discouragement. The wonder is that they did so well when we reflect what it means to a nation to change a system of weights and measures—a system which is absolutely without system, but which, by education and use, has become a part of ourselves. All classes are affected. Fully a generation of people have grown from childhood to maturity in America since the active agitation of this subject began. It must be persistently pressed by scientific organisations, and more thoroughly taught in all our schools before the people will be ready to accept it, in measuring values, in the daily transactions of life.

Mr. Taylor, writing a few years ago on the subject of weights and measures, shows very forcibly the reasons for conservatism in this matter. He says: "They enter into the economical arrangements and daily concerns of every family. The knowledge of them, in established use, is among the first elements of education, and is often learned by those who learn nothing else, not even to read and write. This knowledge is rivetted in the memory by the habitual application of it to the employments of men throughout life. Every family has the weights used in the vicinity, and

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recognised by the custom of the place. To change all this at once is to affect the well-being of every man, woman and child in the community. It alters every house, it cripples every hand."

Herbert Spencer's Views.

Those opposed to the change in England (they are agitating the subject there), are much gratified at having so able an ally as Herbert Spencer. One does not like to see so great a man as he on the wrong side of any question. When he proposes to change our arithmetic, adopt a duodecimal notation in place of the one now in use, and construct an entirely new system of weights and measures to correspond, he is not likely to have much of a following. Tried for this offence, by a jury of his peers, he is quite certain to be condemned. But, by his acknowledged leadership, he commands attention. His arguments, *pro* and *con*, have been, in detail, fully and ably answered by one of our members.

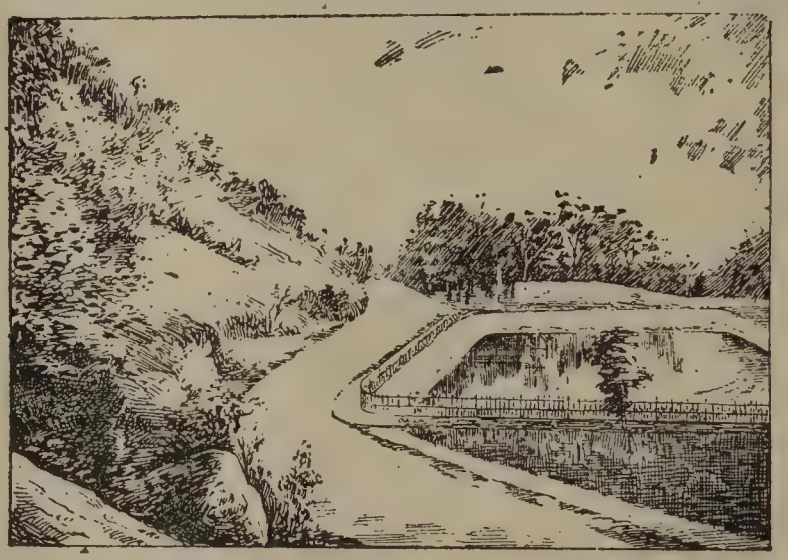
One, in reading after him, cannot help the thought that he deliberately puts behind him that which he and all of us need, when he says: "We want a better system to facilitate both the thoughts and actions of men, and in so far diminish the friction of life." The progress which the system has so far made, he calls the "Bureaucratic Coercion." Its adoption has resulted from the official will, and not from the popular will. "The opinions of shopkeepers were not asked," he says: In reply to this last, it may be said it is a matter about which the average shopkeeper is incapable of an intelligent opinion. He does not care about systems of weights and measures. He uses the actual, material things furnished him. He is familiar with the objects themselves, and soon learns their concrete force and value; and he will appreciate and endorse a system which is as simple as counting from one to one thousand.

The mass of mankind are followers. Our tradesmen would to-day be using the currency of England, if a better one had not been devised by Thomas Jefferson—or by some one having a talent for that kind of intellectual work. In adopting the metric system, Spencer pretends to see the necessity for a decimal division of the circle, and a general mixing up of dates and seasons, by a new table of time, running something like this: Ten seconds make a minute; ten minutes make an hour; ten hours make a day; ten days make a week; ten weeks make a month; and ten months make a year. The system is defective, in his judgment, because in binary division we almost at once have fractions; but then they are decimal fractions, and are just as simple as whole numbers. Measures of capacity can, and by us probably would, be constructed to represent one-half, one-fourth, one-eighth, or one-sixteenth of the unit.

England's Relations with America.

That this system has already been adopted by nearly all of the civilised nations does not impress him as being a very important consideration, inasmuch as "England's external and internal commercial relations are beyond question greater than those of any other one nation."

With us they are intimate and important. They are likely to be between nations speaking the same language. She comes to us for her best dictionaries, and there is a kind of reciprocity in



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the matter of works on pharmacy, which redounds to the advantage of all who use the English language. We would do well to set her an example in this matter. We trust that it cannot long be said reproachfully that Great Britain and the United States are the only two influential nations which have not adopted the "Metric System" of weights and measures.

The National Formulary.

An event of importance in the work of the Association this year is the issuing of a new edition of the 'National Formulary.' The first edition was a popular work, and the second—an improvement on the first—is likely to be more so. The Chairman of the Committee will give his report at the proper time. We have a committee on the Pharmacopœia which does good work, and the "Committee of Revision" is undoubtedly grateful for any assistance which may come to it in this way.

Pharmacopœia Revision.

The Chairman of the Committee of Revision, in a paper read before the section on Materia Medica and Pharmacy of the American Medical Association, at the Atlanta Meeting, discusses quite fully these two propositions:—

1. Shall a table of average doses of drugs and preparations be given in the Eighth Decennial Revision of the U.S. Pharmacopœdia?
2. Shall a selected list of the new synthetic remedies be introduced into the same work?

This is a brief statement of the propositions which are given by him, in a more elaborated form. He supports the affirmative with

good arguments. To follow them is interesting, because one sees at the outset that the author is likely to reach conclusions which some of us suspect are the result of changed opinions. My judgment is that the instructions given to the Committee of Revision by the last convention were correct and proper; but consistency does not demand that one shall, in the year 1900, advocate the same measures that received his support in 1890.

It would, undoubtedly, be desirable to have introduced into our Pharmacopœia a table of average doses of remedies. This would make the book more popular with druggists, as well as among the physicians. There are difficulties in the way of preparing such a table, for a work that is authoritative and likely to be used as such in cases of prosecution. A physician might hesitate to administer an apparently excessive dose of any remedy, even though the exigencies of the case seemed to demand it, if it were possible to use such an authority against him. Furthermore, when "doctors disagree," who shall say what is an average dose of any particular drug? It is thought possible that if a carefully worded text accompany the table, these objections will lose their force, and the expression, "average dose," has the merit of being a more elastic one than "maximum dose." I should be in favour, therefore, of a resolution by this Association, requesting the introduction into the next Pharmacopœia of a "table of average doses of official drugs and their preparations."

As to the second proposition, it seems to me, to deny official recognition to any medicinal agent which is protected by proprietary rights, is indisputably the correct ethical position. Any of that character, which are now so honoured, and "which cannot be produced otherwise than under a patented process," should be dismissed. The physician is not by such action deprived of their use as remedial agents. Notwithstanding the fact that many of these synthetic compounds possess positive therapeutic value, and skill and knowledge have been exercised in their production, until our patent and trade mark laws can be so changed as to protect the public against extortion, they should continue to bear the "stigma of illegitimacy."

Trade Mark and Copyright Laws.

Probably many of the claims which have been set up under the trade mark and copyright laws would be found to be fictitious if properly contested. Certainly a law which will allow a person to register the name of a drug as a trade mark, and thereby secure the monopoly of a medicinal substance, for all time, is fundamentally wrong. In this matter, we can learn of Germany and of England. If the unreasonableness of these laws could be properly brought to the attention of Congress, doubtless they would, in the near future, be modified. We must expect that any effort in this direction will be stubbornly opposed; but it is a matter of so much importance that I trust the Association will take it up, seriously and earnestly. We have a good special committee on "National Legislation" (which might properly be increased in size), which has given this subject considerable attention. Disinterested jobbing druggists and manufacturing chemists would undoubtedly favour legislation which would be unjust to none and bring relief to many.

Progressive Synthetic Chemistry.

Medicine and pharmacy will continue to acknowledge their debt to chemistry. That department of it which we call synthetic chemistry has been especially active and industrious during the past few years. The lists of these newer remedies are, however, so much dishonoured by the products of a pseudo-chemical character that we confess, often in reading them, to emotions akin to those with which we scan a price list of patent medicines.

The Alcohol Question.

The alcohol question is still an open one. The resolution which was passed at our annual meeting in 1894 is familiar to most of you. I submit a very slightly modified form of that resolution:

> "Resolved, that it is the sense of this Association that the payment of the rebate of the internal revenue tax on alcohol should be confined to alcohol used in the manufacture of chemicals, alkaloids, ethers, chloral, chloroform, and such other medicinal or industrial products as those in which the alcohol used will lose, absolutely, its chemical and physical properties."

We can probably unite upon asking as much as this. The commission to be appointed and to whom the subject of rebate on alcohol will be submitted should have an opportunity to listen to a delegation from this Association. I trust that you will agree with me that the occasion demands of us the appointment of such a committee.

International Exhibition at Prague.

An event of importance for the present year is the International Pharmaceutical Exhibition to be held at Prague, Austria, Aug. 15 to Sept. 15. To attend this exhibition, Dr. Fred. Hoffmann, now residing in Leipzig, Germany, has been appointed a delegate. Greetings from us to the President of the Executive Committee it seems to me would be proper for us to send, and gratifying to their officers to receive.

Work of the A. P. A.

The work of the American Pharmaceutical Association extends over a period of nearly half a century. Its records are intensely interesting, in their showing of progress in medicine, chemistry, pharmacy, and the wonderful advancement in the arts and sciences. These records have a personal interest to our oldest members. Those who have "touched the two extremes and filled the interval" are very few indeed. The aims of our Association have not changed in that time. It is still our ambition "to improve and regulate the drug market," "to prevent the importation of inferior or adulterated drugs," and "to detect and expose adulterations," "to encourage the proper relations between physicians and pharmacists," "to improve the art of pharmacy by the diffusion of scientific knowledge," "to suppress empiricism," "to uphold standards of authority in pharmaceutical education," "to regulate the system of apprenticeship," and finally "to create and maintain a standard of professional honesty equal to the amount of our professional knowledge, with a view to the highest good and greatest protection to the public."

Any association, as the term is ordinarily used, is made up of men or women, or both, who associate themselves together for some specific purpose or object. What they do, and how well they do it, depends upon the members themselves. We wish to stand, in every way, for what is best in American Pharmacy, professional, scientific, educational and commercial. Each division is represented on our roll of members, but business ability and professional attainments should not be considered impossible of combination in one individual. The roll is not too long. We invite membership of a desirable quality. Mutual benefit comes with co-operation; and the discovery is made that we all have much in common. Personal contact develops personal kindness, and both the business and the professional man will find the spirit of antagonism melt away under genial influences.

The address having been referred to a Special Committee, routine business was then taken up, the balance of the session including striking of committees on nomination, and "time and place" of next meeting.

THURSDAY, AUGUST 13.

Election of Officers.

This morning's session was one of Committee reports. First was the report of the Nominating Committee, which brought on the election of officers. Their recommendations prevailed with the following results:—

President: Prof. J. E. Morrison, F.C.S., F.R.M.S., Montreal.
1st Vice-President: Dr. J. F. Payne, Atlanta, Ga.
2nd Vice-President; Mr. W. A. Frost. St. Paul, Ma.
3rd Vice-President: Mr. G. W. Parisen, Perth Amboy, N.J.
Treasurer: Mr. S. A. W. Sheppard, Boston.
Gen. Secy.: Prof. Chas. Caspari, jr., Baltimore, Md.
Reporter on Progress of Pharmacy: Prof. C. L. Diehl, Louisville, Ky.
Members of Council; Messrs. J. M. Good, St. Louis; Prof. Remington Philadelphia; C. E. Dohme, Baltimore.

The New President.

The new President is a native of Waterford, Ireland, where he was born in 1862. Coming to Canada early in life he was educated in Quebec High School, and afterwards attended lectures in Laval University, and in 1882 passed the final examinations of the Quebec Provincial Pharmaceutical Association. After spending a short time in the United States he settled in business in Quebec, where he conducted a pharmacy until 1893. With a disposition tending more towards the scientific rather than commercial side of pharmacy, he removed to Montreal and more closely identified himself with the educational interests of pharmacy. He has been for four years on the Preliminary Board of Examiners and three years Examiner in Chemistry, First Vice-President of the Pharmaceutical Association for two consecutive terms, and for three years on the Board of the Montreal College. At present on the teaching staff of the Institution, Mr. Morrison's

record is a sufficient indication of his untiring energy and activity. In the new and broader sphere to which he has been called we look for fresh laurels. The American Pharmaceutical Association while honouring Canada by electing one of her foremost pharmacists as President, has secured for itself a man who will do no discredit to the Association over which he presides.

Presentation of Reports.

Reports presented by the Treasurer, Gen. Secretary, Finance Committee, and Membership Committee, showed the Association's strong position financially and numerically, when the membership standing at 1568, with 101 applications for new members.

Professor Diehl's report on the progress of pharmacy is a lengthy document of an historical nature, in the form of a *résumé* and criticism of editorials and original papers issued during the year by various journals and publications. The bulk of matter is familiar to readers of current pharmaceutical literature.

Award of Prizes.

The award of the Committee on prizes for papers read at the Denver meeting last year was announced as follows:—

1st. E. Kremers, Madison, Wis., "The Chemical Composition of Volatile Oil of Monada fistulosa"

2nd. E. S. Bastin, Philadelphia, "Structure of our Wild Cherry Bark."

3rd. A. R. L. Dohme, Baltimore, "Pure Aconitine of Commerce—Assay of Ergot—Acknowledged Value of Jaborandi."

Dr. Stewart then presented the report of the Committee on "National Legislation."

Discussion on Commercial Interests.

The afternoon session, with G. J. Seabury (Chairman of Commercial Section) presiding, was taken up in a discussion of commercial interests; cutting, substitution, and the curse of ready-made medicines being the principal topics for discussion. In the first no new ideas were imparted, nor were any "new remedies" for the disease prescribed. Against the last-named evil Professor Hallberg, of Chicago, launched a vehement and strongly-worded anathema, placing them in a category below even the Chairman's particular *bête noir* "non-secret preparations."

Place of Meeting for 1897.

The "twin cities"—St. Paul and Minneapolis—secured the next meeting, which will be held on Monday, August 23, 1897, at Lake Minnetonka, a charming summer resort between "the twins." The claims of Nashville, Ten., were strongly pressed by Mr. T. F. Mayne of that city, but "the twins" had the call.

FRIDAY, AUGUST 14.

Meeting of Sections.

This session opened at 10.35 a.m. The Secretary read the names of twenty-five applicants for membership. Officers on Section of Commerce were then elected as follows:—

Chairman, Mr. L. C. Hopp, Cleveland, O.; Secretary, Eugène d'Avignon, Windsor, Ont.; Associates, G. Mennen, New Jersey, J. F. Paton, York, Pa., U. S. Dewoody, Pine Bluff, Ark.

The order of business being changed, the Committee on the President's Address presented its report. Consideration of this was deferred, except that part recommending greetings to be sent to the International Exhibition at Prague. The Secretary was instructed to act on the recommendation.

The Session then adjourned and the section on scientific papers assembled. Chairman S. P. Sadtler presided and read the following address:—

We have met this morning in scientific section and it may not be amiss to devote a few moments to some thoughts on our position in the great family of scientific students and workers.

I will not stop to answer the sneering question sometimes asked us whether the pharmacist is entitled to call himself a scientific man. That is his birthright, and if he traces back the early history of chemistry, botany, or even medicine, in its primary meaning as the curative art, he will find that they were cradled and fostered in the pharmacist's shop. If the modern pharmacist occasionally sells his birthright for the pottage of commercial gain, it can not take from the earnest and conscientious worker inherited claims to a broad and important field of scientific activity.

Where does this field lie and what are its bounds? We answer first that a field peculiarly allotted to the pharmacist who wishes to do his share as a scientific man is that of pharmacognosy, or the study of natural raw materials with reference to the medicinally active principles they contain, the identification and tests for them, the best methods for their extraction and purification and their character as medicines or posions, etc. The study of this field it is true antedates the history of modern chemistry, and in the Iatrochemists of the seventeenth and eighteenth century we recognise the scientific pharmacists of those days. That we have a mass of information as the result of the labour of the hundreds of industrious workers in this great field may be seen if we glance through some of the great classics on the subject, such as Husemann and Hilger's 'Pflanzenstoffe,' Wittstein's 'Handwörterbuch der Pharmacognosie,' Wiesner's 'Rohstoffe des Pflanzenreiches,' Planchon's 'Les Drogues simples d'origine végétale,' Pennetier's 'Matiéres Premiéres Organiques' and Flückiger and Hanbury's 'Pharmacographia'; and, that the field is not exhausted by reading the monthly issues of the *American Journal of Pharmacy*, the *Pharmaceutical Review*, and similar journals, and the yearly report on the progress of pharmacy, the 'Jahresberict der Pharmacognosie,' etc.

But it is not only the natural sources of medicinally active principles that should occupy the scientific pharmacist's attention. The raw materials which yield food preparations and those which are the basis of many large chemical industries equally furnish subjects which may properly attract the working investigator of the pharmaceutical profession.

Few of us realise how extensive this field is and what enormous quantities of unutilised materials yet remain calling for investigation.

In Philadelphia we have the beginnings of a great commercial museum, and, although it is only provisionally arranged and in temporary quarters, it makes a bewildering show of the raw materials and partially manufactured products from all parts of the world, filling four floors of a very large building and 200,000 square feet of space. It was chiefly gathered from the great wealth of foreign exhibits which most of us remember to have seen in the Columbian Exposition at Chicago in 1893. Here are materials for investigation for dozens of pharmaceutical chemists, and the results could not but be of great and perhaps far-reaching value.

Still another field which the pharmacist should have, but which he has practically lost by inability to work it is that of synthetic organic remedies.

Who are the manufacturers of these compounds which have made such an impression upon medical practice within the last decade?

The great coal tar colour manufacturing firms of Germany, and we pay from four to six prices for these products in consequence. They have the matter in their hands because they keep a corps of scientific investigators at work on these lines and command their whole time and efforts. When our large manufacturers of pharmaceutical products are willing to employ and pay a corps of chemists one-fourth as large as that kept by some of these German companies, they will find that much that now comes to us from the other side of the water could be made here and profitably too.

I may be permitted to enlarge a little on this point, as I feel strongly upon it as a Professor of Chemistry in an Educational Institution which stands ready to turn out young men with a chemical training, and to point out the difference between German manufacturers' methods and those so far followed by us, and to quote from a recent address before the New York Section of the Society of Chemical Industry by Dr. C. Duisberg, the technical director of the Farbenfabriken vormals, Frederick Bayer and Co., of Elberfeld, Germany. He says:—"We not only try to make use of all the derivatives of the tar from wood and coal for the production of aniline and alizarin dye-stuffs of all possible descriptions, and also of very diverse pharmaceutical products, such as phenacetin, sulphonal, trional, salicylic acid, somatose (a new alimentary product), saccharine, etc., but we produce also the inorganic products necessary for their manufacture, such as sulphuric, hydrochloric, and nitric acids, chlorine, etc., and a large number of intermediate organic products.

"In our works there are at present about 100 chemists having a university education and about twenty-five engineers who have been trained at a technical high school. They are recruited from almost all the universities and technical high schools of Germany, and the greater number have been engaged by me personally during the last ten years."

Can we doubt that if to German thoroughness of this kind we were to add American energy, we might expect equal if not greater results.

However, I am afraid that my audience are beginning to think that I have mistaken them for a chemical society, and am unable to talk anything but shop.

My apology must be that the difficulty lies in the subject, and that the scientific pharmacist must be a chemist if he would be a thorough pharmacist, and hence my talk must be apropos after all.

Let us turn, however, next to the question of the methods of study and research which the modern worker in scientific pharmacy should follow.

Those of us who completed our college education from twenty-five to thirty years ago will remember the relatively simple character of scientific studies of that day as compared with what seems necessary for a properly educated man now.

The reasons for this difference are two-fold. A wider range of studies must be covered owing to the broader demands which modern society makes of her educated citizens, and the interdependence of the several branches of science is constantly becoming greater. For instance a thorough pharmaceutical chemist nowadays must be more than a simple analyst. He must have a good foundation of mathematical physics to enable him to understand modern chemical theory, especially with the rapid development of electrolytic theory and methods; he ought to be an adept with the microscope and have a good working knowledge of botany; he should be acquainted with the most recent advances in bacteriological methods, as many pharmaceutical preparations can only be made by such means.

If we take the manipulative side of the pharmacist's training, what wonderful advances have been made in the making of elegant preparations as compared with those with which we would have been satisfied two or three decades ago. In many branches of study which were formerly taught in a purely didactic way, laboratory methods of study have been introduced as in botany, pharmacology, etc.

The field before the scientific student of pharmacy has therefore broadened, the methods of study have become more diversified and varied, and the resources and facilities of our schools have been correspondingly increased. If we are as interested in the advance of pharmacy as we claim to be, let us not fail to be equal to our opportunities.

Pharmacists have taken a high rank in the past as investigators and discoverers in science, the present leader in electro-metallurgical research and discovery in Europe is a Professor in the Superior Pharmacy School of Paris—Henri Moissan, and the field of experiment with us is just as open to a pharmacist as to any other class of scientific students.

Let the influence of this Association be thrown with all the weight we can give it in favour of the cultivation of the field which belongs to us.

To this end, the action taken last year, at the suggestion of my predecessor in this chair of forming a Committee of Research would seem to be eminently proper. It has not yet, however, been productive of very extensive results. Possibly if the Committee were made larger and more representative, including more of the centres of pharmaceutical research, it might be made to accomplish more.

While I make no recommendations on this subject, it is a matter which would well occupy the attention of the section at one of its sessions. By a free interchange of opinion we could learn how to best stimulate the activity of all interested in this most desirable work.

Committee on Indicators.

The report of the Committee on Indicators was afterwards read, and a discussion followed. Professor W. S. Scoville presented some points observed in the manufacture of ext. nucis vom. during a period of cold weather, when the thermometer registered about 0° F. The percolate secured in a room at about 20° F. presented a very light appearance. This characteristic prevailed with the result after evaporation. The extract was also found freer from oily substances than that secured during a higher temperature, but of a higher alkaloidal strength, being in proportion of 21 or 22 per cent. to 17 or 18 per cent.

Dr. Rusby asked the experience of others in the matter of differences in Brazil wood, he having noticed considerable variations in different samples, but was unable to trace the histories of such.

Professor Caspari, discussing alkaloidal assay, suggested that the variations in results of gravimetric analysis was due to traces of chloroform left in the varnish-like residue after evaporation of percolate, and that such residue should be treated as often as three times with ether to remove these traces. At the close of the discussion of the report it was resolved that this Committee be continued for another year.

Presentation of Reports.

Professor Bartley read the report of Committee on the coming revision of the U.S.P., which was received and the discussion deferred until the afternoon session.

Professor Prescott presented his report on Original Research, which on motion was received and the recommendations adopted.

Professor Ebert drew attention to the work of this Committee, and complained that sufficient funds were not at their disposal. He suggested that as the last edition of the U.S.P. had produced a revenue to the value of 20,000 dols., while the expenses of same had only been nearly 10,000 dols., a portion of the balance be set apart for prosecuting the work of this Committee with more vigour. The discussion which followed showed the nobility of character of the true scientist, each and all, who had taken part in this work begging to be relieved from the necessity of receiving remuneration for such.

A Committee of three was named to report at next session a scheme to place this Committee on a permanent basis, so as to prevent the possibility of disturbance in its work by changes in its membership.

Afternoon Session.

The first business of this session was election of officers, which resulted in Professor W. C. Alpers, of New Jersey, as Chairman, and Professor Virgil Coblentz, of New Jersey College of Pharmacy, as secretary.

Committee on Revision.

The discussion of the report on Committee on Revision of the U.S.P. was taken up, and during the discussion on the recommendation regarding volatile oils which followed, Dr. Kremer called attention to the fact that it is comparatively easy to make suggestions for changes or supposed improvements. It is with volatile oils much as it is with alkaloidal drugs. Our knowledge of the chemical composition of alkaloids is still too limited to be able to work out satisfactory methods for assay of any large number of drugs. The same is true of our knowledge of the chemical composition of volatile oils; yet whenever our knowledge of the chemistry of the subject is sufficient to devise methods of assay of the known important constituents, such should be worked out as soon as possible. Their methods in most instances not only have a superior value over the use of physical constants for similar purposes, but they often can be devised so as to be less complicated than the present methods of assay of alkaloidal drugs already introduced into the Pharmacopœia. The discussion was sustained by Professors Fennel, Hallberg, Bartley, and Kremer. This part of the report was finally disposed of by the following resolution submitted by Professor Hallberg :—

"That the percentage of valuations and limitations of the essential constituents of the volatile oils be referred to the Special Committee on Research for report to the Association at next meeting, or the one two years hence. That the same Committee be requested to report on the Constitution of Commercial Oil of Bays."

The warmest discussion of the meeting so far was brought out by the recommendation to eliminate all liquors and wines that might be used as a beverage from the U.S.P. The cause of so much interest being taken in this subject is more commercial than scientific. "Liquor in the drug store" is a burning question with our American pharmacist. The laws dealing with the matter are most unsatisfactory, and in many States oppressive, the notorious "Raines Law of N.Y." being the last burden laid on the shoulders of an already overbalanced profession.

Prof. Remington's plea for their retention prevailed. He contended that the U.S.P. was the only means of fixing an official standard for an article of everyday requirement.

All of the report except these portions previously referred to special committees was recommended to the National Committee on the "Revision of the Pharmacopœia."

Research Committee.

The Special Committee to recommend a permanent basis for the Committee on Original Research recommended that the Committee consist of four members, with the Chairman of Section on Scientific Papers as *ex-officio* members, two members to retire each year. The report was adopted, and the following papers read:—"The Caffeine Compound in Kola," by James W. T. Knox and Professor A. B. Prescott; "Taraxacum," by Professor L. E. Sayre; and the Report of the Special Committee on Original Research.

SATURDAY, AUGUST 15.

Scientific Section.

This was essentially "paper day." During the morning the scientist continued to "hold the boards," and in the afternoon the educationalists and legislators had their innings.

Of the score of papers presented all but two were merely read and sent on to the Publication Committee, some being even "read by title."

Of the two exceptions, Prof. W. C. Alpers' "Gelatin Capsules" received considerable attention because of the fact that it dealt with a subject of importance to the working pharmacist. That part treating of "powder filling" was followed closely. An instrument devised by the Professor was exhibited, and its workings shown. This instrument is simple but complete, and renders capsule-filling accurate and easy.

In the discussion following, Prof. Remington complimented Prof. Alpers for his interest in affairs of the working pharmacist.

Professor Sadtler, of Philadelphia, on "Some Results Obtained by Distractive Distillation of Linseed Oil," was interesting in view of the discovery of the petroleum-like oils in the product. As remarked by the professor, "This will have a bearing on the theory of Engler as to the origin of petrolatum."

This brought the work of the Scientific Section to a close.

Section on Education and Legislation.

Section on Pharmaceutical Education and Legislation. Chairman, Professor Hallberg, Chicago, read his address. As the salient points were dwelt on in the Secretary's report, as well as in a paper read by him, there was no discussion, but the address was merely referred to Committee on publication.

The papers of Professor Whelpley, Dr. Reed, and H. H. Mason were the texts of the discussions which followed. The consensus of opinion as expressed demonstrated that State boards of examinations were the parties most in need of education, and not the candidates for registration.

Professor Remington recommended the examiner to place himself in the place of student and endeavour to find if his question has not more than one meaning.

Professor Good recommended more kindness in dealing with candidates, and to show them that they have not been called before an inquisition.

Dr. Reed said boards were created to ascertain if candidates were safe men to perform their duties rather than to erect a high or low standard of scientific knowledge.

Professor Whelpley said the time was opportune to talk on answers rather than questions. Inflexible rating he considered a mistake, and should be discarded. He also recommended that questions should be asked, without any suggestion as to the line of answer, such questions being the delight of the quiz-compend fiend.

This discussion, as also the one following on legislation, again demonstrated that all matters touching closely on the interests of working pharmacists aroused greater interest than any others.

All the interesting matter brought forward regarding legislation demonstrated that the laws of the U.S.A. governing pharmacy are in inextricable confusion. This was recognised, and a resolution adopted placing the whole matter again in the hands of the same Committee, with instruction to correspond with State boards of pharmacy, heads of universities, and any others likely to have suggestions to offer, and present at the next meeting, a model Act to be recommended to State boards for their guidance.

The following officers of the sections were re-elected and duly installed:—

Professor Hallberg, Chicago, President. Professor Beal, Scio, Ohio, Secretary.

This closed the business of the section.

TUESDAY, AUGUST 1.

Second and last session of the Association; President Good in the Chair. After routine business the names of ten applicants for new members were read. This makes a total of 112.

Presentation of Reports.

The first report was presented by Dr. Payne, Chairman of Committee, on "Status of Pharmacists in the U.S.A. Army and Navy." This servant of the State occupies a most undesirable position for any educated man, as pharmacists are required to be below that of even the carpenter or blacksmith. An earnest effort is being made to elevate him to position of the highest non-commissioned officer of the service. A fair measure of success has attended the efforts made during the past year.

Chairman Dr. Stewart, of the Committee on Metric Weights and measures, presented his report. The present condition of legislation on the question he quoted from his report, as follows:—

On March 10, 1896, the Hon. C. W. Stone, Chairman of Committee, succeeded in getting the Committee on Rules to fix a day for bringing the question before the Congress. Two days' debate followed, and the Bill passed into law by a vote of 119 to 116 by one member changing from the affirmative to the negative. A motion of reconsideration was carried and the matter again referred to the Committee on Coinage, Weights and Measures. The Committee has every reason for encouragement. The Bill making the system law was actually passed, and only Parliamentary procedure prevented it from coming into effect. The influence of leading members of both houses is pledged to support when the matter again comes before the houses.

Concluding Business.

Professor Hallberg called attention to the fact that the Government of Mexico had adopted the metric system, and made it compulsory. This made the system official in all Central America.

The Committees to whom the President's address was referred, reported the adoption of the recommendations in those sections referring to the continuation of the work of elevating the standing of pharmacists, and also with regard to the metric system of weights and measures. A recommendation *re* a table of doses and synthetical remedies was sent in for consideration at the next meeting.

The Committee on Legislation continued, and the name of Mr. E. Muir, of Montreal, was added as Canadian representative.

Mr. W. H. Chapman, of Montreal, and Mr. F. S. Hereth, of Chicago, presented the new-elected officers, who were duly installed.

Mr. Mayo, of the *American Druggist*, moved for a committee of five to take into consideration the advisability of the American Pharmaceutical Association meeting for 1900 being held on board a steamer bound for Europe. Congratulatory addresses, responses, and votes of thanks to the retiring officers were then dealt with and a vote of thanks to the Local Committee of Management was also carried. Thus the forty-fourth meeting of the American Pharmaceutical Association was brought to a close, with hopes of again all meeting at Lake Minnetonka.

Senecio jacobea and Senecio vulgaris as Emmenagogues.—The action of various species of *Senecio*, but chiefly *S. jacobea* and *S. vulgaris*, have been exhaustively investigated by Dalché and Heim, and independently by Bardet and Bolognesi. In each case the solid extract advocated by the former authors was employed; this is obtained by extracting the whole plant, roots as well as ærial portions—since the alkaloids exist only in the former—first with water, and then with alcohol, mixing the extracts and evaporating to pilular consistence on the water bath. This solid extract was given in doses of 20 to 40 centigrammes as a pill or bolus. Both investigations prove that the extract is an efficient emmenagogue, and at the same time perfectly harmless in ordinary doses; the dose may be gradually increased from 25 centigrammes up to as much as 5 grammes per diem. If too large a dose be given at first, utero-ovarian congestion, attended by pain, is observed, indicating that in excessive doses the drug may act as an abortifacient, but in ordinary quantities it appears to be absolutely safe. It is without influence on the pain occasioned by dysmenorrhœa (*Bullet. Général de Thérap. Sect. Pharmacol*, i., 438, and *Nouveaux Remèdes*, xii., 422).

PHARMACEUTICAL JOURNAL.

A Weekly Record of Pharmacy and Allied Sciences.

ESTABLISHED 1841.

Circulating in the United Kingdom, France, Germany, Austria, Italy, Russia, Switzerland, Canada, the United States, South America, India, Australasia, South Africa, etc.

Editorial Office: 17, BLOOMSBURY SQUARE, W.C.
Publishing and Advertising Office: 5, SERLE STREET, W.C.

LONDON: SATURDAY, AUGUST 29, 1896.

SCIENTIFIC EDUCATION.

When a leading article and two or three columns of the *Times* are devoted to the consideration of a subject, that circumstance may be regarded, even in the dull season, as a tolerably sure indication of its importance, and a good reason for anticipating that it may receive adequate attention. Those who appreciate the national importance of scientific education will, therefore, have been pleased to see in that paper last Tuesday a very interesting letter from Professsor Ostwald, of Leipzig, in which he describes the educational system obtaining at the universities in Germany, the mode in which German chemical manufacturers avail themselves of its results, and the liberal State support accorded to universities and technical schools in that country for the promotion of research. Thanks are due to Professor William Ramsay, to whom the letter was addressed, for having been the means of securing its publication in the *Times* and for pointing out the useful lessons to be learnt from the information it contains.

Professor Ostwald's letter deals mainly with the German method of instruction in physical science, especially chemistry, and he shows that one very important condition of its success consists in the fact that in Germany the position of a technical chemist in manufacturing works is very often almost as scientific in its character as that of a professor at a university. Each large manufacturing establishment has its research laboratory and scientific staff, the members of which are university graduates who are occupied not in the management of the manufacture, but in research. The highly trained chemist finds there an ample field for remunerative exercise of the capabilities acquired in his university training. That is in itself a most important circumstance, and to its influence Professor Ostwald attributes the remarkable development of technical chemistry which has taken place in Germany within the last fifty years. This utilisation of scientific capacity has placed German manufacturers far in advance of other countries: it is the "very marrow" of their splendid development. Moreover, the industrial demand for theoretical proficiency reacts upon the universities and their professors, giving to scientific teaching an exceptional vitality and productiveness. Another point to which importance is attached is that the examinational system plays but a small part in German methods of instruction. That appears, however, to be a natural consequence when students have something to look to beyond mere examination, after passing which they may either forget most of what they have learned, or have to re-learn it in new forms and relations.

In the leading article commenting upon Professor Ostwald's letter it is fully admitted that, in regard to the physical sciences at least, university education is "somehow more satisfactorily managed in Germany than in England," that "the theoretical and technical output of Germany is far larger, more regular, and of better quality for practical purposes than our own." In addition to this ample confession inquiry into the causes of this superiority is acknowledged to be desirable. Under an apparent misconception of Professor Ostwald's views as to the merits of the German practice, the writer of the article argues that the difference between Germany and England is not due to differences in the methods of teaching pursued, but to the spirit in which that work is done, and we do not think Professor Ostwald would dissent from that opinion. The point of chief importance is that while "in Germany there is an immense industrial demand for men scientifically trained," there is in this country hardly any demand at all. On this point the *Times* says: "Our industrial chiefs are so 'practical' that they will have nothing to do with research, and even for the direction of their ordinary operations they prefer a man who approaches them from below to one who comes down from the heights of theory." This statement may be a little too sweeping in its application to the present time, but in regard to the relative decline of British industry it is too well founded. Meanwhile Germany is rapidly monopolising the higher and more lucrative branches of manufacture, and is even prepared to supply any demand there may be for technical experts. Under these conditions our universities and other teaching institutions also suffer, for having no practical aim set before them, they "train their men in books, and turn them out fit for little but to grind books into the next generation of students."

In proceeding to consider the remedy for this great evil, the *Times* justly remarks that for any healthy reform we want driving power, and it is suggested that the driving power must come from manufacturers enlightened enough to understand the secret of German success and English failure. Hence it is urged that industry must endow research by offering a field for the exercise of highly-trained scientific ability. That is no doubt in the main correct, but the endowment required is one of faith in the utility of science and research. The important question still remains how our industrial chiefs are to be inspired with that belief and induced to abandon their practical tendency in the opposite direction. To arrive at that result, the lesson has to be taught that there is an intimate connection between science and industrial art. As Professor Ramsay points out, it is the conviction of that fact which has led far-sighted leaders of German industry to the conclusion that "progress in pure science is progress in its industrial application." Therein lies the real cause of the difference between Germany and this country. If we were to fit ourselves out to-morrow with brand new German educational machinery, it would not follow, as the *Times* remarks, that we should be any nearer German results than we are to-day. Germany is now reaping the fruit of a century's cultivation of science, and has learnt the lesson of its utility, which has yet to be learnt in this country.

ANNOTATIONS.

The Ootacamund Botanic Gardens, opened in 1846, during the Governorship of the Marquis of Tweedale, cover an area of 51·45 acres. In 1871 these gardens, which had hitherto formed a part of the charge of the Superintendent of the Cinchona Plantations, were placed under a separate officer, but in 1883 they were controlled by the Director of the Government Cinchona Department. The Burliyar Branch Garden, situated at an elevation of 2500 feet above sea-level, was purchased by Government in 1871 for the sum of Rs.2000. The object of its acquisition was to extend the culture of the ipecacuanha, which was found not to flourish at Ootacamund, where the elevation is 7300 feet. The Burliyar Garden is well adapted for the growth of fruit trees, such as the mangosteen, litchi, durien, mango, jack, and bilimbi, besides nutmegs and cloves. In the early part of 1874 the Government opened a pleasure ground at Coonoor consisting of about thirty acres. This garden, which is styled "Sim's Park," in memory of Mr. J. D. Sim, a late member of Council, possesses a rich soil and abundance of water, and is interspersed with natural sholas. A medicinal garden was opened in Ootacamund in 1877. It is about five acres in extent, and is cultivated with medicinal plants for supply to the Medical Department at Madras. A large area of land near Dodabetta is planted up with jalap, and about 500 lbs. of the tubers are annually sent to Madras and Bombay. A small experimental garden was, in 1888, opened at Gudalur for the trial growth of palms, coca, and fruit trees, but it has not been very successful, on account of the distance of the land from headquarters and the absence of proper supervision. The ipecacuanha which has been planted out at various places on the Nilgiris without any satisfactory result has, for about five years, been making slow progress at Nilambur, the station of the teak-growing region of Malabar.

The Liverpool Chemists' Price-List evidently continues to give satisfaction, since the tenth edition—issued last year—has been exhausted rapidly and the eleventh now presents itself for consideration. The prices have been carefully considered throughout and a few alterations made, but the Committee of Revision has wisely decided to maintain the former scale. It is, of course, well understood that the prices fixed are for the dispensing and retail sale of articles for medicinal purposes. Chemicals required for trade and photographic purposes should, it is suggested, receive special treatment in the matter of price. Even those who are unable to obtain the list prices entirely will find it to their advantage to arrange their business systematically on the basis of this book, altering the prices where necessary to meet their peculiar requirements.

The British Association meeting opens at Liverpool on Wednesday, September 16, and it is expected that the full programme of the proceedings will be circulated during this week. Sir Joseph Lister is to deliver his presidential address in the Philharmonic Hall, and the sectional meetings will begin on the following day, continuing then until the afternoon of Wednesday, September 23, when the concluding meeting will be held in St. George's Hall. The evening arrangements include lectures on "The Earth—a Great Magnet," by Professor J. A. Fleming; "Man Before Writing," by Professor Flinders Petrie; and "Safety in Ships," by Dr. Francis Elgar. Dr. Nansen is also expected to attend and address the geographical section on the subject of his recent adventures, whilst conversaziones, excursions, and garden parties—including one at Knowsley Hall—will pleasantly diversify the arrangements.

Botanical Garden in New York.—The 'Bulletin of the New York Botanical Garden,' vol. i., no. i., which has just appeared, gives an account of the constitution, rules, and intended uses of the garden. The management is practically in the hands of some of the wealthiest inhabitants, including such names as Vanderbilt, Carnegie, Morgan and Morgan, etc., with the well-known botanist, N. L. Button, as Secretary. We are glad to see also that Professor H. H. Rusby, as representing pharmaceutical botany, is one of the members of the Corporation. As yet the garden is in embryo—the site has been selected and the trees already existing have been labelled to the extent of one hundred by the Committee of Scientific Directors. These consist of the President of Columbia College and the professors of botany, geology, and chemistry therein, the President of the Torrey Botanical Club, and the President of the Board of Education of the City of New York, and their successors in office. These will control the scientific and educational departments of the garden, and the appointment of the Director-in-Chief of the garden, who will appoint his first assistant and chief gardener. The objects aimed at are establishing and maintaining a botanical garden, museum, and arboretum for the collection and culture of plants, flowers, shrubs, and trees, the advancement of botanical science and knowledge, and the prosecution of original researches therein, and in kindred subjects, for affording instruction in the same, for the prosecution and exhibition of ornamental and decorative horticulture and gardening, and for the entertainment, recreation, and instruction of the people. The Columbia College has agreed to deposit its Herbarium and Botanical Library in the new garden, on condition of being able to recall it and any additions made to it at a year's notice. There will thus be a valuable series for reference as soon as the new buildings are completed. The gardens will, however, commence a museum and library of its own. In return for this arrangement the Columbia College may conduct, either alone or otherwise, university courses at the garden without any charge. Botanical material needful for study will be supplied for undergraduate work to it and other colleges, public schools, and other educational institutions subject to the regulations of the garden authorities. A beginning for the herbarium has been made by the purchase of a large collection of fungi, including 75,000 specimens, recently the property of Mr. J. B. Ellis, Newfield, N.J.

Telephones for Deafness.—In the *Lancet*, for August 15, Mr. B. Thornton states that he has been able to adapt telephones so as to enable deaf persons to hear. He found that with the telephone he could produce an intensification of the voice at least equal to the most approved form of ear-trumpet, at a distance varying from six inches to a foot from the mouth of the transmitter, and that on approaching the mouthpiece to within two or three inches the sound was obviously distressing to some deaf-mutes. At a distance of a foot from the mouth of the transmitter it was possible to make some of the best "hearing children" easily hear sentences of familiar words spoken in a low, conversational voice, the speaker being inside a room and the patient outside, with the door shut. The receiver being held close to the listener's ear, the sound of the speaker's voice is reproduced opposite to, and within an inch and a half of, the membrana tympani, and as the sound waves are thus confined in the external meatus, there is no loss by radiation. The "lamprophone," as the new arrangement is termed, is supplied by Messrs. Maw, Son, and Thompson, the complete apparatus comprising a pair of telephones fitted with appropriately-shaped handles, and a battery of three dry cells.

"Protection for Chemists and Druggists" is the plea in support of which an anonymous correspondent of the *Glasgow Herald* is allowed to monopolise almost a column of that journal. But his arguments are sufficiently well put to fully justify the publication of his letter, even at that extravagant expenditure of valuable space, and though he has slightly exaggerated in places, the public mind ought to be influenced in the right direction by the production—if only the public would read it. For such is the tendency to seek mental pabulum served up in a brief and condensed form nowadays, time being regarded as too precious to be spent in reading long dissertations, that there is difficulty in attracting attention to a subject of the most vital importance without risking failure in another direction by treating the matter too briefly. It may be of interest to mention that the remedy proposed by this anonymous friend of pharmacy is to approach the Privy Council with a view to purging the Register, by removing the names of registered men who "cover" those not legally qualified in pharmacy.

The Chemists' Exhibition offered a cheerful prospect on Monday last, when visitors stepped in from the wet and muddy streets, the brightness afforded by the multitude of electric lamps contrasting most favourably with the gloom outside. The stands were all ready to be inspected when the Exhibition opened, and the crowd of country cousins that soon accumulated was not disappointed by the sight of rows of empty benches and unpacked boxes—a common experience on such occasions. The show was a representative one, the number of exhibitors exceeding a hundred and twenty, and there were attractions and counter-attractions galore. Hospitality was freely dispensed at the *B. and C. D.* office and at the "Camwal" Welcome Club, while the Hungarian Ladies' Band in national costume soothed the ears and pleased the eyes; the Exhibition must be described as a huge success from all points of view—except perhaps that of the pharmacist who would prefer to conduct his business on his own lines rather than be forced into grooves moulded by manufacturers.

British Trade should benefit by the carrying out of Mr. Chamberlain's suggestion that patterns or specimens of goods of foreign origin, which have displaced or are displacing similar British goods, should be sent to this country by Colonial Governors. The duty of housing and distributing such samples has been undertaken by the London Chamber of Commerce, and that body is now receiving and exhibiting the first batch of collections. They will continue to be exhibited at the offices of the Chamber of Commerce, Botolph House, Eastcheap, between 11.0 a.m. and 4.0 p.m. daily (Saturdays, 1.0 p.m.) until September 5, and admission to view the exhibits may be obtained on presentation of business card. British manufacturers will be unwise if they fail to take advantage of this opportunity of ascertaining definitely in what directions they are being cut out of certain markets. At the same time they are not likely to improve their reputation by emulating the enterprise which leads to the distribution of many of the rubbishy articles exhibited.

The Vaccination Commission Minority Report is chiefly interesting, observes the *Daily News*, as dotting the *i*'s and crossing the *t*'s of the Majority Report. The serious agitation against vaccination—as implied in the main report and made prominent in that of Dr. Collins and Mr. Picton—is due to the failure of the operation to do all that was claimed for it and to the serious after-effects produced in many cases. There is little doubt that the case for vaccination has suffered from over-statement, and the Royal Commissioners arrive accordingly at the somewhat paradoxical result that "the best way to make vaccination more widespread is to make it less compulsory."

The American Pharmaceutical Association has concluded its forty-fourth annual meeting, and in the present number of the Journal we are able to publish a special account of the proceedings. The members appear to have been well and hospitably received by the Montreal pharmacists. Our special correspondent says: Should there have been any who questioned the heartiness of the welcome tendered the members, none brave enough to doubt its warmth were there. What the Committee of Reception might have lacked old Sol supplied with more than his usual liberality. Many of our Southern cousins had anticipated an escape from his all too attentive care, but they were disappointed to find that in this frigid zone the mercury had the same disagreeable habit they know so well of mounting to the nineties and lovingly lingering there, despite the fact that by so doing the city's reputation as a pleasant summer resort was being reduced to rags and tatters. The *Montreal Pharmaceutical Journal* celebrated the occasion by coming out in a much enlarged form, portraits and brief biographical notices being given of all the prominent individuals taking part in the annual meeting. We gather that this has been altogether a most enjoyable and profitable meeting. Especially gratifying is it to find that such good feeling prevails in pharmaceutical circles in the States and in the Dominion. The papers read will be dealt with in the *Pharmaceutical Journal* next week.

Prescriptions by Pigeon Post is the newest idea in medical practice, the *Medical Press and Circular* describing how a medical man in Scotland, the area of whose practice is very wide, resorts to this method of facilitating his business. On visiting patients far from home he carries some carrier pigeons with him, and after writing a prescription for an urgent case, he immediately despatches it home by means of one of the birds. Time is thus saved in delivering the medicine. Another course adopted is to leave a pigeon at a patient's house, and in case of need it is liberated to advise the doctor that his presence is desirable. Some people will doubtless prefer to continue to repose their trust in older, slower, and surer methods, for everyone is not in a hurry to take medicine, but the plan of delivery per "pigeon post" seems to possess certain advantages and may commend itself to many.

The Teasdale's Chlorodyne Case at Sheffield (*vide* p. 194), has furnished a toothsome morsel to several journalists who are inclined to accept too seriously the not always sapient extra-judicial remarks of county-court judges. In this instance the judge seems to have been annoyed because he was not told more than it was necessary for him to know regarding the circumstances under which the case was prepared. Surely, however, a judge's business is to listen to evidence and arguments, and give decisions on the merits of cases, with due regard to the letter of the law. Whether or not the defendant ever intended to set up a chemist is quite beside the question—the point at issue being whether or not he, being unqualified, had sold poison. That being settled, the wording of the Pharmacy Acts of 1852 and 1862 is sufficiently clear to require no speculation as to its intent. To say that the case was one never intended to be covered by the 1868 Act is to assert that the intention was not to prohibit the sale of scheduled poisons by unregistered persons, which would be absurd. More law and less opinion on the judicial bench is a state of affairs much to be desired.

Carbolic Acid, administered in mistake for syrup of buckthorn, caused the death of Charles Robert Davis, aged two years, at Bethnal Green, last week. Both fluids were kept in similar bottles side by side in the same cupboard. The verdict "accidental death" may be justified, but had it been one of manslaughter, good might have come of the further investigation that must have followed.

THE CHEMISTS' EXHIBITION.

DESCRIPTION OF EXHIBITS.

An exhibition of products more or less intimately connected with the drug and chemical trades has been held during the week, from the 24th to the 28th inst., and from all appearances has been a pronounced success. The *British and Colonial Druggist* is again responsible for the organisation of the show, the general arrangements of which reflect credit upon those responsible. Last year the place of *venue* chosen was the Agricultural Hall, but this building not being available on this occasion, the management was compelled to fall back upon the National Skating Palace, Argyll Street, W., which has proved an efficient and in some respects preferable substitute. On the one hand the central position has been decidedly in its favour, whilst the compact and picturesque style in which the exhibits were grouped would appeal to many, but it must be said that the ventilation was not all that could be desired. This defect, however, from the construction of the building, could not be remedied, and there were so many cosy nooks provided to which a visitor could retreat for rest and refreshment, that there was little ground for complaint. The management appears to have spared neither pains nor expense to ensure the comfort of visitors, and their efforts have been thoroughly appreciated. On this occasion space will only allow of a general account of some of the more important exhibits, but we shall have more to say on the subject next week.

The Apollinaris Company, Limited, 4, Stratford Place, Oxford Street, W., naturally gave prominence to the water from which the company takes its name, but, in addition, a good show is made of Friedrichshall and Apenta Waters. The latter is claimed to be a natural aperient, and a recent analysis made affords confirmation of the statements set forth in regard to the proportion of magnesium and sodium sulphate present, whilst the taste can be described as bitter rather than nauseous. It is most active in its therapeutic effect, and from what we can gather seems to be becoming very popular with the general public. An extensive assortment of literature, especially in regard to Apenta water, was shown, whilst a variety of tasteful show tablets also caught the eye in passing.

The interests of **Bleasdale, Limited**, York, were looked after by Mr. Humphreys, their managing director, during the greater part of the week, but on the opening day Mr. G. A. Grierson, who until recently occupied the same position, put in an appearance, and renewed his acquaintance with the firm's customers. The exhibit was of a thoroughly representative nature, and afforded convincing proof that this historic house is thoroughly abreast with the requirements of the present-day pharmacist. Prominence is given to citrate of magnesia, a leading line with Bleasdale's, and which they claim to be the first to put up in lever-lid tins for retail purposes. The innovation is certainly one, the advantages of which can be appreciated, whilst the general "get-up" of the packages is very attractive. The "Busy Mother" Infants' Food is another specialty which is said to be making good headway, and it may be noted that it differs from most of the preparations of this class in not being a malted food, but a combination of baked wheat and sugar of milk. Syrup of violets is often a troublesome preparation, on account of unsatisfactory keeping properties, but the *syrup violæ sicc.* which we were shown seems to obviate this objection. It is a combination of the pure colouring matter of pansies with sugar in the form, as the name indicates, of a dry powder. It will keep indefinitely, and makes a nice liquor or syrup when diluted. Within the last year or two the firm have launched out extensively into the putting up of specialties which are calculated to meet the every-day wants of chemists' customers, and it need only be said that the *tout ensemble* was in every case all that could be desired. A bold show of galenicals, coated pills—the finish and colour of which was noticeable—tablets of drugs and animal substances, perfumes, and cachous made up a very creditable exhibit.

Bleasdale, Limited, showed a distinct novelty apart from their own goods, which has been invented by Mr. Maud, of Pontefract. This was an unbreakable cork, which was also elaborated so that this quality was combined with a poison guard and cork-lifter. There have been several devices recently brought forward, intended to prevent accidental poisoning, but the practical utility is often doubtful. In this case the idea is an excellent one. The unbreakable cork is simply one through the centre of which a double wire is run. A curved piece of tin driven tightly into the top and secured with sealing-wax projects about a quarter of an inch on each side, and has a space at the top for a small poison or ordinary label. The projecting ends are pointed, and at the same time allow of a good grip on the cork, even when driven into the bottle-neck as far as possible: hence removal from the bottle without any chance of breaking is ensured. The fact that corks fitted with the wire and guard cost but little extra is naturally a strong point in its favour.

The British Castor Oil Company, Ltd., is now a fairly familiar name at exhibitions, and the fact that they were again represented on this occasion having been mentioned, little need be said. Most people know that this oil is really what it claims to be—that is to say, cold drawn—the process by which it is extracted and filtered having been fully described about eighteen months ago. The finished product is quite different from one's preconceived notion of castor oil, having a bland taste, more like olive oil. In addition to being put up in bottles, the oil is sold in winchesters, tins, and drums for the convenience of customers who wish to bottle it themselves.

Burroughs, Wellcome, and Co., Snow Hill Buildings, E.C., occupied a position on the immediate right of the entrance. The exhibit was a good one, and embraced the leading lines for which the firm are makers or sole agents. Above the stand were two barrels, one of which represented the Kepler Extract of malt, and the other the malt and cod-liver oil of the same brand, whilst between them the source of malt extract was symbolised by means of a small sheaf of barley. Below these was shown a specimen of *Gadus morrhua* which having in its lifetime done duty as an unwilling exhibit at the Carlisle Museum of the British Medical Association, now, when defunct, fulfilled the same office in a passive condition. On the right side of the stall prominence was given to lanolin and its preparation, including the hydrous and the anhydrous woolfat, toilet lanoline, pomade, and soap. A good show was also made of the Wyeth beef juice, a concentrated preparation of fine lean meat, in which the albuminous constituents of blood serum are claimed to exist in an unchanged form. The Wyeth dialysed iron is a preparation the excellence of which is universally acknowledged, and side by side with it were shown glycerole chloride of iron, a ruby red non-astringent preparation, and the Wyeth wine of tar. The electric light served to show prominently the contents of the show-cases, which, besides comprising a series of physiological specimens, included tabloids of animal substances and those employed in ophthalmic and hypodermic surgery. The general list of tabloids is being added to almost weekly, amongst the more recent ones being eucaine hydrochloride and compound cocaine. In addition, prominence was given to "soloids" (or compressed antiseptics), hazeline and its preparations, and tea and photographic tabloids.

The Chemists' Aerated and Mineral Waters Association, London, Bristol, Harrogate, and Mitcham, appropriated a larger area than any other exhibitor, a spacious pavilion on the first tier being beautifully fitted up, and here every convenience was afforded to visitors, whether members or non-members of the Association. Needless to say, this was fully appreciated by a large number, some of whom found the cool and comfortably seated room an agreeable *rendezvous*, where refreshments were liberally dispensed, whilst others yielded to the persuasions of Mr. H. T. Butler, the Secretary of the Association, and his energetic staff, and enrolled their names as members of the Association. An invitation card of novel design was issued by the Association, having reference to the "Camwal" Welcome Club, and we learnt that on this occasion the number of new members who have joined the Association has been double of that of the corresponding occasion last year. We noticed that some novel advertising appliances have been brought out recently, which are likely to attract custom. Amongst these is a monster syphon of about four-gallon capacity, inside which an electric lamp is fitted. This is supplied to customers at half cost, and will no doubt be appreciated in cases where power is laid on. Another was a combined syphon-cooler and drop-catcher, suitable for good class trade, which can be supplied at a small cost, and would no doubt pay to distribute amongst good customers. The case is of tin, and has space for ice or water, whilst it is fitted with a spring inside, which prevents the case

the syphon becoming detached when removed from a table. There is no necessity to dilate on the advantages of "Camwal." Everyone knows that only shareholders, who must of necessity be chemists, are supplied, consequently a trade monopoly is established in the sale of the waters. We mention this fact because forcible reminders of it in the shape of sandwich men carrying placards to this effect have been parading Oxford Street during the week.

Thomas Christy and Co., 25, Lime Street, E.C., occupied an extensive space on the ground floor. The stand was surmounted by a large model of the Tyree litmus pencil, which we understand continues to increase in popularity, and has been very satisfactorily reported on by reason of its convenience and delicacy as compared with ordinary litmus paper. As usual the Morstadt cachet apparatus is prominent amongst the exhibit, an effective display being made of the machines themselves, and the empty cachets. In regard to the former, we were interested to learn from Mr. Jahn that a cheap form has just been put on the market, the price being ten shillings. This will make three cachets of all the sizes simultaneously, and it is therefore suitable for pharmacists who have only a limited demand for this refinement of dispensing. A large jar filled with English lavender flowers flanked the display of cachets, whilst in proximity was a pyramid of tins of neo-kola, a preparation of the fresh nuts in the form of a chocolate-coloured powder, which can be had either flavoured with vanilla or plain. Speaking from experience, it can be said that when mixed with boiling water and milk as directed, a very agreeable beverage is produced, which possesses the stimulating properties of the drug in a marked degree. Other preparations of the kola nut were also shown, including kolatina, kola champagne, chocolate, elixir, tablets and wine. Close at hand the various preparations of the N. W. K. brand of woolfat caught the eye. These included the hydrous and anhydrous preparations, both of which will melt at the normal temperature of the body, and are admirably adapted for use as ointment bases. Alapurin, the latest addition to the series, is a beautiful preparation. It is almost white even when in the anhydrous condition, whilst it is quite free from the characteristic woolfat smell, and has not the pronounced stickiness noticeable in many preparations of a similar nature. A portion of the stand was devoted to **Frederick Stearn and Co.'s** preparations, amongst them being Dike's pepsin, of 3000 test, which is non-hygroscopic, and dissolves completely in water, forming a clear solution. Wine of cod-liver oil, "hæmo-ferrum," and aromatic cascara, all high-class pharmaceutical preparations, were also shown. The firm are agents for the veterinary preparations of P. Méré, of Chantilly, which comprise a red ointment, black mixture, and embrocation. It should also be mentioned that the preserved green fruits of Jambul were shown. These have been used in several hospitals, where they are prescribed with success in the treatment of diabetes.

Cooper and Co., 80, Gloucester Road, South Kensington, S.W., devote the greater portion of their space at the disposal to a display of the "Finot" cachet apparatus and the various varieties of cachets. The prescription of medicaments, the administration of which would otherwise be difficult, has doubtless been greatly increased by the extended use of cachets in this country, where, however, they are by no means as popular as in France. Still, M. Finot, who has been present at the exhibition during part of the week, says he finds that the demand increases very rapidly, and as evidence of the way in which west-end physicians now prescribe them, it may be said that Mr. Cooper has three machines in regular use for retail purposes at Gloucester Road. The "Finot" apparatus has received notice before in these columns, and it need only be said that the finish, both of the machine and the cachets, which are made in all sizes and colours, is all that could be desired. It may, however, be noted that Messrs. Cooper and Co. have a regular business in stamping the cachets with the name and address, as well as the contents, for chemists who wish to utilise this method of putting up specialties. A corner of the stand was devoted to liquor quininæ salicylatis, a well-known specialty of the firm, in bulk and in bottles, whilst the sinapine tissue was also in evidence.

Evans, Gadd, and Co., Fore Street and Smythen Street, Exeter, draw special attention to their make of chemical food, in the keeping qualities of which they have confidence, and which they recommend to the notice of pharmacists at home and abroad. Another leading line with them is citrate of magnesia, which is made in three qualities, to suit the requirements of every class of trade. The remainder of the space is chiefly occupied by medicated granules and a representative display of galenicals in general demand. The firm do their own linseed crushing and drug grinding, and have devoted a lot of attention lately to the perfume trade, both in bulk and also for retail, whilst the series of packed goods are sufficiently varied and tasteful in appearance to meet all needs. The policy of the firm seems to be thoroughly go-ahead, and it is quite capable of holding its own, in spite of the keen present-day competition. The exhibit was under the charge of Mr. H. W. Gadd.

F. Foster, 29E, St. Nicholas Street, Scarborough, have a small stand on the second tier, but the articles shown are of considerable interest to pharmacists. The merits of the "Keystone" tablet machine have received attention on a previous occasion in these columns. We understood from Mr. Foster's representative that since the publication of the article referred to the mechanism has been considerably improved, especially in the feeding arrangements. This machine will readily turn out between 70 and 100 tablets per minute. The "Little Diamond" apparatus is one specially adapted to the use of dispensing chemists for making tablets in small quantities as in prescription work, and although of course unpretentious when compared with the "Keystone," it is capable of producing a satisfactory article at the rate of 20 to 30 per minute. Of even greater interest was the "Pearl" suppository machine, which has been put on the market as a cheap representative of the "Perfection" machine. This apparatus is fitted with four moulds, one each for making three 15 and 30 grain suppositories, one for a 100 grain pessary, and one for a bougie, all being turned out simultaneously. The medicament is mixed with the cocoa butter in a similar way to making a pill mass, the remainder of the operation being done by compression. Specimens of tannin, lead, and belladonna suppositories were shown, which satisfactorily demonstrated the efficiency of the process.

Idris and Co., Limited, Pratt Street, Camden Town, were represented by a stand on the first tier, where a prominent display was made of their waters in syphon and bottle, the quality of which is too well known to need any emphasis on this occasion. From our point of view more interest was attached to the way in which the manufacture of every variety of show tablets has been extended and perfected. When paying a visit to the factory some months ago, we recollect that Mr. Idris was then making arrangements for coping with extended business in this direction, and we now learnt from their representative that two or three travellers are employed for this department alone. This was not surprising when joint considerations of quality and price were considered, and every variety of work is undertaken from the simple legend "Prescriptions accurately dispensed" up to elaborate opal plates adorned with hand-painted floral designs and gilt lettering. Over the stand was fixed a chemist's lamp, suitable for the exterior of a pharmacy, whilst a handsome row of show syphons of three-gallon capacity and lettered in gold, are doubtless appreciated by their customers as an advertising medium.

Jewsbury and Brown, Ardwick Green, Manchester, take up a prominent position with their display of mineral waters in syphon and bottle, the stand, draped with crimson velvet and nicely decorated with flowers, having a very tasteful appearance. Since moving into their new premises this firm has largely extended the scope of its business, which has for many years been extensive in the North of England. On this occasion prominence is given to koumiss in syphons, which of course obviates the use of a champagne tap, lysidine, piperazine, and aerated lime waters, of which the strength is guaranteed, as well as the Pharmacopœial soda and potash waters. Amongst the bottled goods quinine tonic water, carrara water, horehound beer, champagne cider, and ginger champagne give a varied appearance to the exhibit. This firm states that a fair profit is secured to retailers of their products by prohibiting price cutting.

Liebig's Extract of Meat Company, Ltd., 9, Fenchurch Avenue, E.C., have their well-known preparations arranged in a handsome case, which is now tolerably familiar to those who have had occasion to frequent shows of this description. As might be expected, prominence is given to the peptone of beef offered under the name of "peptarnis," which is intended specially for invalids' use and those of weak digestive power. It is claimed on behalf of it that it contains the largest amount of nourishment in the most easily digested form, of any meat preparation now on the market. The preparation is put up in handy tins of one, three, and seven

ounce capacity. The remainder of the space is devoted to the Extract of Beef originally introduced by Baron von Liebig.

Llewellin and James, Bristol, devote the space at their disposal chiefly to Morris and Wethered's patent automatic stills, the obvious advantages of which have led to its adoption by many pharmacists. They are made in various sizes, the one which was working at the exhibition being designed for laboratory use, the heating power being gas. It is made of copper, and works automatically in such a way that whilst the rate of distillation is satisfactory, condensation is quite efficient. The same firm are also makers of copper-jacketed steam pans, one of which intended for sugar boiling being shown.

T. Howard Lloyd and Co., 86, High Street, Leicester, have a fine array of high-class pharmaceutical products. Prominence is given their series of soluble pearl-coated pills, with the manufacture of which Mr. Lloyd has been specially identified for many years. The finish of these, both in the white and coloured varieties, was very striking. Attention is also given to pearl-coated dog, poultry, and bird pills, of which a variety was shown. Bi-conical horse balls have obvious advantages over the ordinary variety generally used, and chemists can be advantageously supplied with these labelled with their name and address. Granular citrate of magnesia of all qualities, and medicated effervescent preparations were also represented. A prominent line with the firm is the series of "compressed flowers," which are tablets of pure sugar flavoured with various perfumes. These have become very popular, and can be had perfumed with heliotrope, rose, violet, lavender, etc. Compressed tablets of solid inks under the name of "Inklets" are made in various colours, and are particularly suitable for export to tropical countries. In addition there was an attractive display of chemist's specialties put in various styles for retail use.

S. Maw, Son, and Thompson, 7–12, Aldersgate Street, E.C., had undoubtedly the finest position in the exhibition, their stand facing a visitor immediately on entering. Little can be said of an exhibit of this nature, except that it was thoroughly representative of the traditions of the leading sundries house. Prominence was given to a fine array of cut-glass toilet bottles and perfumes, surgeons' instruments and appliances, whilst the multitudinous sundries and toilet preparations, with the preparation of which the firm is associated, were worthily represented. Mr. Carter and a staff of assistants were in attendance to give visitors any information which might be required.

John Moss and Co., Galen Works, New Cross, S.E., were responsible for an exhibit which was more representative of pure pharmacy than any other. Here Mr. John Moss and his assistants had their time fully occupied in explaining items of interest to their visitors. In the first place, apparatus was in evidence with a convenient form of extractor made of copper, which is frequently required for the rapid examination of new drugs. In addition, at the further end of the stall Jones' still alarm was working. This handy laboratory indicator was described at the 1895 meeting of the British Pharmaceutical Conference. Prominence was naturally given to cascara sagrada bark and its preparations, for to these Mr. Moss has devoted a considerable amount of attention. A specimen of beautiful bold quill bark, said to be the finest ever imported, was shown; whilst side by side specimens of the matured bark used by the firm and that usually met in commerce afforded a marked contrast. Winchesters of the pharmacopœial fluid extract were shown, together with the miscible and tasteless preparations. A good deal of space was devoted to a solid linen marker which has been recently introduced, and seems likely to come into general use. It is in the form of a pencil at one end, whilst at the other is a stick of mordant. The article to be marked is rubbed with the latter, and then the necessary writing done with the pencil. The result is a marking which is indelible, instantaneous, and jet black. Mr. Moss is justifiably proud of his capsules, of which an extensive assortment intended for home and foreign trade, containing cascara, santal oil, copaiba, etc., were shown. Round the edge of the stall laurel camphor soap was displayed. This is a medicated soap specially designed for removing freckles, and for surgeons' use after operations. Extract of malt in combination and alone was shown, the fluid preparation of which was particularly elegant. Space will only allow mention of the fact that in addition to the special preparations mentioned, prominence was given to a recently introduced beef juice, unusually rich in albuminoids, a selection of crude drugs, and a good show of tinctures, liquors, syrups, infusions, and coated pills.

Parke, Davis, and Co., 21, North Audley Street, W., occupy an excellent position to the left of the entrance, which has the advantage of being the only one which is naturally well lighted. The chief novelty to which our attention was drawn was a preparation of monocarbonate of ammonia in cubes about half an inch square, which is intended to be used in cases where salts of prunella have hitherto been indicated. We were informed that the pungency of the salts is not liable to diminish so long as care is taken to keep them in a dry, well-stopped bottle, in fact a sample bottle, which was taken round by a representative during a two months' journey, seemed little affected. Some prominence was also given to Taka-Diastase, a fungoid product used in the treatment of some forms of dyspepsia, which was recently referred to favourably in these columns. In addition, Taka-Koji, the crude fungi from which Taka-Diastase is obtained, was shown, as well as wheat bran, on the surface of which the fungus grows. At the back of the stand there was displayed a row of fine show bottles, containing such special pharmaceutical products as essence of coca, extract of witch hazel, ethereal antiseptic soap, emulsion of cod-liver oil with hypophosphites, and euthymol. The latter is a liquid antiseptic, containing as its active ingredients eucalyptus and wintergreen oils, thymol, menthol, boric acid, and fluid extract of wild indigo, and is therefore of considerable service wherever a non-poisonous disinfectant of agreeable odour is indicated. As most pharmacists know, the firm has paid a large amount of attention to perfecting processes for the preparation of fluid extracts, and prominence was given to representatives of this class of preparation. The centre of the exhibit was occupied by a handsome stand, on which were arranged specimens of refined pharmacy in the shape of gelatine-coated pills and compressed tablets, which demonstrated the perfection of finish in every case. Space will not allow of a detailed description of the remainder of the exhibit, and it can only be said that a series of digestive ferments was prominent, including aseptic pepsin of 1000 to 15,000 test, saccharated pepsin, lime juice and pepsin, and concentrated liquid pepsin and pancreatin, whilst the results given with rennin, a milk curdling ferment, when added in the proportion of one grain to a pint of milk are such as prove it to be thoroughly reliable in its action. Samples of lactophenin, said to be a specific against typhoid fever, and resembling phenacetin in its general action; ferratin, a combination of iron and an albumin derivative, as well as a standardised antidiphtheritic serum, prepared in the firm's laboratories, were also shown.

Potter and Clarke, Artillery Lane, London, E.C., and Great Ancoats Street, Manchester, devote a good deal of the space at their disposal to a good show of fresh English-grown drugs and herbs, whilst there was also a series of the crude drugs used in the preparation of specialties of the firm. An enormous squill bulb caught the eye, whilst new season chamomiles, lavender flowers., etc., were also in evidence. A new line with the firm is a datura cigarette, in the manufacture of which the datura asthma cure, for which they have long had an extensive sale, is used. These are neatly boxed and are certainly good value. Another leading line is dandelion coffee, free samples of which are supplied to chemists for distribution who purchase the sixpenny and larger sizes, as well as suitable advertising matter. A good show of packeted bird and flower seeds was made. These articles are packed in a very attractive way, and are well worth the attention of country chemists in suitable localities.

Reynolds and Branson, Leeds, had a splendid collection of pharmaceutical and scientific appliances, in the designing of which the inventive genius of Mr. Fred. Reynolds has been very prominently brought into play. Mr. Reynolds has been present at the exhibition during the week, where his receptions have afforded instruction and amusement combined to many visitors. Amongst the appliances shown were all those which have been described at various times in the Journal. The dust-proof dressing drawers have been greatly improved lately. They are now provided with glass slides which fit in the top of the tin, and are automatically cleaned when drawn out to place the dressings upon. The whole arrangement is absolutely dust and germ proof. The "enema valve

strainer" is a handy contrivance, which when fitted to the valve of the enema effectively prevents the tube becoming blocked with any extraneous matter. The latest addition to the series of novelties is a handy nasal douche, which is reasonable in price and goes into very small compass. In addition to the foregoing, the improved enema cupboard, clip, and rack, bandage and pill-box shoot were shown. Pure science was represented by the Röntgen apparatus, with the manufacture of which the firm are specially identified, whilst the sundries required for radiography were all in evidence, including the "x" ray meter, an aluminium quadrant designed by Mr. Reynolds for measuring the intensity of the "x" ray tubes.

The Sanitas Company, Ltd., Bethnal Green, E., have an exhibit, with the nature of which most of our readers are familiar, and which serves to impress upon a visitor that Mr. C. T. Kingzett, their managing director, is never content with resting upon his laurels, but is always on the look-out for some new sanitary combination. On the present occasion specimens of okol, a non-poisonous emulsified disinfectant of high germicidal power, were shown. A prominent position was given to a circular-letter which is being sent to chemists, in which special attention is drawn to the advantages of the sulphur candles made by the firm as an efficient and economical fumigator. "Sulphugators" are of a similar nature, but are more particularly applicable for destroying insect life and disease germs in smaller spaces, as a rapid and easy combination is ensured from the freedom with which the air gains access to the burning sulphur. The Sanitas Company are now devoting attention to the sale of all chemicals used in the manufacture of disinfectants and antiseptics generally, and from their position as large buyers they are in a position to supply such articles as permanganate of potash, carbolic acid, and eucalyptus oil on favourable terms. Suitable advertising matter in the shape of note-books are distributed, whilst attention is drawn to the issue of a new edition of the popular little book "How to Disinfect."

Southall Bros. and Barclay's exhibit possessed a notable feature in the shape of a large pure white natural block of a recently-discovered infusorial earth, for which the firm has become sole consignee, and to which the registered name of "Dimatos" has been given. Reference is made to this elsewhere. Samples of coated pills were also shown, special attention being directed to their well-known Blaud's pill, described as "perfect" some time since by the *British Medical Journal*, and a large piece of beautifully green Blaud's Pill mass was exposed for inspection in a glass vase. Another important feature was a series of "A 1" oils, now made complete by the addition of an olive oil manufactured under the personal supervision of one of the employés of the firm at Grasse, and claimed by them to be the finest oil of the kind which has ever been offered to the trade. We noticed also samples of the leading galenicals manufactured by the firm, such as granular effervescents, scale preparations, the official resins of scammony, jalap, podophyllin, etc., compound infusions, standardised tinctures, unofficial standardised belladonna preparations, and an improved torpedo-shaped suppository, brought out by the firm about twelve months ago. Another feature of the exhibit was a typical show of the "Attractive Specialties," which is the title given by the firm to the series of articles they issue with buyer's own name and address. A detailed description would occupy too much space, and it can only be said the specimens give a good idea of the artistic style in which they are put up. Perfumes and the "improved" sanitary towel were also shown.

James Townsend, of Exeter and London, made a large display of labels in all styles and colours, which were hung in frames round their stall. The catalogues distributed by them were neat productions, and contained miniatures of a large number of labels, whilst they were embellished with a photograph of the Exeter printing staff, which numbers some two hundred hands. The firm does not restrict its attention to labels only, but all varieties of printing likely to be required by chemists can be executed advantageously. In addition, specimens of neat almanacs and calendars for the coming year were shown, as well as a new serrated pine-tree toilet paper of good quality, and nicely packed in fancy green and gold cases, which shows a good profit when retailed at 6*d*.

WELSH NEWS.

A Benevolent Chemist.—It is stated that the late Mr. J. T. Jones, chemist and druggist, of Bute Road, Cardiff, has left instructions that a certain sum of money shall be applied to the establishment of a ward at the Cardiff Infirmary, to be called the "Jones, Chemist, Ward." The amount of the legacy is not yet known, but it is believed to be several thousand pounds, and will not be available during the lifetime of the widow.

FOREIGN NEWS.

Röntgen Rays for Testing Saffron.—It has already been seen that pharmacy has not escaped the craze for applying Röntgen rays to extraordinary purposes. In *Comptes rendus*, a French pharmacien proposes to employ the x-rays to detect the presence of inorganic dressing, such as barium sulphate on saffron (see *Ph. J.*, lvi., 433). The plates when developed give distinct pictures of the adulterated filaments, while the undressed threads give a bare outline. It is hardly credible that this method can be put forward seriously, since the presence of dressing of this nature can be so quickly and readily proved by merely floating a few threads on water, when the dense insoluble dressing quickly falls as a precipitate through the liquid.

Poisoning by Pyrogallol.—The recorded cases of poisoning by pyrogallol are so few that considerable interest attaches to a recent case which occurred in Paris, in which a young man committed suicide by drinking off a glass of absinthe and water containing 15 grammes of pyrogallol. The immediate symptoms were sensations of burning, nausea, dark-coloured vomit, smoky urine, containing methæmoglobin and oxyhæmoglobin, with three parts per mille of albumin. The patient expired in a comatose state after three days.

Lead Poisoning from the Smoke of Painted Wood.—A curious case of lead poisoning is reported by Charrier, in which two persons were attacked with colic, and all the characteristic symptoms of saturnine intoxication, after burning in a pipe-stove a quantity of old painted wood derived from demolished houses. The harmful effect of this wood when used as fuel has previously been noticed by Vulpian, who related that a veritable epidemic of colic was produced in a quarter of Paris, caused by a baker using paint-covered wood to heat his oven (*Répert.* [3], vii., 307).

Digitalis Leaves.—A very pertinent note on digitalis leaves has been communicated by Strahler to the *Therap. Monatshefte*. The writer notes the markedly varying intensity of the physiological action of the leaves, and lays stress on the fact that they should, when possible, be gathered by the pharmacist himself, being collected when the flowers are just opening, deprived of their stalks, rapidly dried, and powdered. The stock should be renewed each year. He further notes that the leaves are much more active in some years than in others; thus the crop of 1892 was markedly more active than that of other years. The leaves obtained from the sunny district of the Schwarzwold are always more powerful than the product of Northern Germany. The author does not recommend the substitution of the glucosides for the classical infusion, since the therapeutic action of these bodies is not yet sufficiently understood.

Amblyopia Produced by the Abuse of Stramonium.—A patient of Di Cerillo (*Recueil d'Ophtalmol.*) complained of dimness of vision which could not be satisfactorily accounted for, until it was accidentally discovered that he was in the habit of smoking stramonium cigarettes. Having previously employed this remedy for the relief of dyspnœa, he had continued the practice long after his respiratory trouble was cured, until he acquired a taste for the drug, which he used to excess. Abstention from stramonium for two months sufficed to restore his vision to the normal condition.

Cloves in Zanzibar.—The production of cloves in Zanzibar and Pemba Islands last year was in advance of that of any one of the preceding five years, amounting to nearly nineteen million pounds, of which rather more than one-fourth were produced in Zanzibar. The practice of adulterating Pemba cloves with salt has been checked by the prompt seizure and public burning of the sophisticated article on arrival at Zanzibar.

Telephonic Experiments in Russia. — Some remarkable telephonic experiments have recently been made in Moscow, messages, airs, and songs having been conveyed by means of M. Keldushoffsky's new telephone between Moscow and Rostoff on the Don. The distance between these two towns is 900 miles, and the wire used was over 1800 miles long. It is stated by the representative of the Moscow *Gazette* who witnessed the experiments that the inventor of this new telephone intends visiting England shortly to see whether telephonic messages cannot be conveyed from England to America by means of the Transatlantic cable by his method.

IRISH NEWS.

Irish Drug Contracts.—The misuse of drugs in Irish workhouses continues to give trouble to the union officials, the Local Government Board, and the taxpayers in general. Within the past week two drug contractors have been deprived of their appointment by the Local Government Board, viz., Messrs. English, Mullingar, and Messrs. Goldon, Birr. In each case the medicines were overcharged for. From Listowel comes an account of seemingly extravagant use of medicines on the one hand, and extreme frugality in dispensing on the other. The Guardians hold that either a too lavish hand is permitted, or that the poor are suffering from an insufficient supply. Meantime, those doctors who have retrenched have been complimented on their zeal.

The Quack Doctor still flourishes in Ireland. One of the fraternity named Costello operated a few days ago on a little boy who had fallen and hurt his leg. The bone-setter pronounced the knee cap dislocated, worked it backwards and forwards, and prescribed a poultice of salt and mashed turnips. The child began to rave next day, and cerebro-spinal meningitis, supervening death, ensued. Medical evidence showed that no bone was injured, and the coroner animadverted strongly on the manner in which the unfortunate child had been pulled, dragged, and tortured in the manner described. He requested the Crown would investigate the matter.

Sir Charles Cameron, public analyst, Dublin, fought last week in the police court a three-cornered battle in the defence of his report, that certain samples of milk examined by him recently were adulterated with starch and added water. Sir Charles' opponents were Professor Tichborne, the well-known chemical *savant*, and Somerset House, the *ipse dixit*, of which latter department the doughty knight declined to recognise. Having broken a lance with each adversary, the Court inflicted substantial penalties upon each of the defendants concerned, and Sir Charles left the legal arena with an imaginary wreath of laurels reposing on his manly brow.

PROCEEDINGS UNDER THE PHARMACY ACT.

Illegal Sale of Teasdale's Chlorodyne.

Pharmaceutical Society v. *Burgon and Co.*

On the 19th inst., at the Sheffield County Court, before his Honour Judge Waddy, Q.C., the Council of the Pharmaceutical Society sued Burgon and Co., of 130, Whitham Road, Sheffield, grocers, for two penalties for keeping open shop for the retailing of poison contrary to the provisions of the Pharmacy Act.

Mr. R. E. Vaughan Williams, instructed by Flux, Thompson, and Flux, appeared for the Society. Mr. A. Neal represented defendants.

Mr. Vaughan Williams, in opening the case, said the action was brought against Messrs. Burgon and Co., who were grocers, having a number of shops in Sheffield, for two penalties under Section 15 of the Pharmacy Act, 1868, for keeping open shop on May 1 and 12 last for the retailing of poison, viz., morphine. On May 1 Mr. Foulds went to defendants' place of business at 130, Whitham Road, where he saw displayed on the counter a number of bottles of Teasdale's chlorodyne, and then and there bought a bottle of this mixture. On the 12th he found this same chlorodyne displayed for sale, and he again bought another bottle. This chlorodyne bears upon its wrapper the following "Labelled Poison—To prevent accidents from its careless administration, especially to infants, but does not contain any of the poisons in Schedule A., part 1 to the Pharmacy Act." He mentioned this to show that any person stocking this article for sale could from its wrapper ascertain that it was a poison. The poison contained in this article was morphine, and morphine was included in Schedule A, Part 2, under the description of "preparations of opium," it being the chief toxic ingredient of opium, and preparations of morphine had been added to the Schedule by order in Council under the authority of Sec. 2 of the Act. After reading the correspondence in the case, Counsel pointed out that the excuses put forward formed no defence to the action, and that in law the motive can make no difference. He thought defendants' solicitor would like him to mention that penalties had been recovered from a firm of precisely the same name trading in Manchester, and that although at one time it was thought that defendants were the same firm, he accepted the explanation and assurance of defendants' solicitor that the two firms were entirely separate and distinct. This, however, did not affect the question in this case, but he thought it only fair to the defendants to make the explanation.

Mr. Neal: Counsel has nearly covered the whole correspondence. Has your Honour read the letter of June 23?

His Honour: I do not think the letters affect the question.

Mr. Vaughan Williams: The Society is not bound to enforce penalties only in cases where proceedings have previously been taken; if so, it could never begin. He would prove the purchase and the circumstances under which they were exposed for sale, and there would be no difficulty in coming to the conclusion that defendants were keeping open shop, and the witness he should call put the matter beyond doubt by making purchases.

He would put in the annual Register and the certificate of the analyst, which had been admitted by defendant's solicitor, and that would be his case.

Arthur Foulds (examined by Mr. Vaughan Williams): On May 1 last went to 130, Whitham Road—a grocer's shop with the name Burgon and Co. over it.

His Honour: Not simply a chemist's shop?

Witness: No; The chlorodyne was displayed on the counter of the shop.

Mr. Vaughan Williams: I say it is sufficient for me to prove that poison was in the shop to be sold.

Witness: The bottles were in a small box on the counter.

Mr. Neal: I do not dispute the identity of defendants with that shop.

Witness: I went to the same shop again on May 12 and bought another bottle of the same article; subsequently I handed them to Mr. Moon.

Cross-examined: I am an inquiry agent. I was instructed to make two purchases. I came from Manchester twice.

Harry Moon (examined by Mr. Vaughan Williams): Proved receipt of the bottles of chlorodyne from Mr. Foulds, and subsequently handing the bottles to Mr. E. J. Eastes for analysis. On August 5 Mr. Eastes sent in a report.

Mr. Vaughan Williams: I put in Mr. Eastes' report, which is as follows: "The chlorodyne contained, amongst other ingredients, morphine—the chief toxic constituent of opium—and chloroform."

Cross-examined: I gave instructions to Mr. Foulds. The Registrar instructed me to cause a second purchase to be made.

Re-examined: I get my instructions from the Registrar.

Mr. Neal admitted that defendants' names were not on the Register.

Mr. Vaughan Williams: That is my case.

Mr. Neal said: I have the utmost confidence that a judgment of non-suit must be entered in this case. I ask your Honour to look at the Statute, and I first take the point that there is no evidence that Mr. Bremridge is the Registrar of the Society; the proper evidence of the fact would be production and proof of the minutes of Council containing his appointment. The document before your Honour is not evidence, and is wholly insufficient. My second point is that the document contains no authority to sue for two penalties other than by inference. Thirdly, the offence in Sec. 15 is to keep open shop for the retailing of certain poisons which are scheduled.

His Honour: In the Schedule is opium and all preparations of opium and poppies.

Mr. Neal: My point is that the particulars of claim are defective

in alleging that morphine was sold contrary to the Pharmacy Act, 1868, without alleging further that morphine had been added to the Schedule of Poisons by order of the Privy Council, and there is a fourth point that the particulars of claim do not allege that a preparation of opium was sold.

His Honour: I think Mr. Williams should mention his contentions in reply to these objections.

Mr. Vaughan Williams dealt at length with the objections, contending that the proceedings were taken in a sufficient form, that there was in the authority sufficient evidence that Mr. Richard Bremridge was the Registrar; that the same authority was sufficient to cover proceeding for any number of penalties; that the Schedule of Poisons included all preparations of opium, thereby including all the alkaloids of opium, of which morphine was the chief; and that the particulars of claim rightly described the poison found, which was in fact "morphine," contained in this chlorodyne as an ingredient.

His Honour: I should not think of stopping a case of such importance until I have heard more of the facts.

Mr. Neal then dealt with the facts, and stated his client did not on either day keep an open shop for retailing of poison. Mr. Burgon had been in business in Sheffield as a wholesale and retail grocer for thirty years. He purchased by tender the stock of Messrs. Holmes and Green, which included some two dozen bottles of Teasdale's chlorodyne. After receiving the stock he divided the chlorodyne between two shops, about one dozen bottles going to Whitham Road shop, and submitted that it was a straining of words that defendants, who were grocers, were under those circumstances keeping open shop for retailing poison, and that on the facts as well as the law the defendants were entitled to judgment.

Charles Burgon, examined by Mr. Neal: My firm carry on business at seven or eight shops in Sheffield. My son is my partner. I have been a grocer thirty-two years. I am chiefly occupied at our wholesale premises. Each shop is carried on by a manager. We were creditors of Holmes and Green, and bought their stock. There was some chlorodyne in that stock. A list of that stock was prepared by one of our assistants. I found Teasdale's chlorodyne entered in that list.

His Honour: When did you send this chlorodyne out?

Witness: About March or April of this year. I had no knowledge that Teasdale's chlorodyne contained a poison. I never saw the article: gave Hodge, manager at another shop, instructions not to sell any more chlorodyne. We do not sell or purchase chlorodyne in the ordinary way of business.

Cross-examined: We bought this chlorodyne and sold some of it,

His Honour: Mr. Foulds, when you bought this first bottle did you go to the shop to buy that and nothing else?

Witness: I went to buy that article. The shopman sold me that bottle. I saw him again on May 12.

Mr. Vaughan Williams submitted that on the facts he had made out a case. It had been proved by defendant himself that he bought this article, and that he sold it, and when that was done plaintiffs had done all that was requisite, and the Court could come to no conclusion but that defendants had kept open shop for the sale of this poison.

After a hearing which lasted four hours, His Honour, in giving judgment, said: The decision is one I shall give with infinite regret, and one which I hope will be upset on appeal. It is admitted by Mr. Williams, and very properly admitted, that there is no reason to believe that there was any intention on the part of the defendants to lead persons to believe they were chemists. It is not suggested that anything like a chemical business was being carried on by Mr. Burgon. If the Society are going to put the Statute into force in such cases as this I regret being the officer having to apply the law. Mr. Burgon's evidence compels me to give a verdict against him. He knew that this article was in that stock, and having sent it out for sale, allowed it to remain for the purpose of being sold. I am forced to find a verdict for the plaintiffs. As to the points of law, I think there is evidence that Mr. Bremridge is the Registrar. I think the authority is sufficient for the bringing of this action, and that to sue for two penalties is not a breach of such authority. The pleading point is one which I cannot allow to avail. Whilst I give judgment against the defendants, I think the Society have been put on their track believing them to be somebody else. I give judgment for the penalties.

Mr. Neal applied to the Judge to exercise his discretion not to allow plaintiffs' costs. A long discussion took place upon the Statutes, and eventually his Honour postponed giving his decision until October.

NOTES AND FORMULÆ.

Artificial Crystalline Carlsbad Salts.

Sulphate of potassium, 2; chloride of sodium, 18; sodium carbonate crystals, 61; sulphate of sodium crystals, 88; distilled water, 50 parts. Dissolve the sulphate of potash and the chloride of sodium in the water, and add this solution to the other two salts, previously melted in their water of crystallisation. Evaporate to 180 parts, cool, and stir to prevent the formation of large crystals, without, however, allowing them to be reduced to powder. Dry in the air, moistening occasionally with a little of the mother liquor. By dissolving 8 grammes of this crystalline salt in a litre of water, artificial Carlsbad Sprudel water is obtained.—*Bullet. Commercial*, xxiv., 323.

Artificial Kissingen Salts.

Chloride of potassium, 17; sodium chloride, 357; anhydrous sulphate of magnesium, 59; bicarbonate of sodium, 107 parts. Dry separately and rub together. Seven grammes dissolved in a litre of water forms artificial Kissingen water.—*Bull. Comm.*, xxiv. 323.

Dentifrice New Powder.

Carbonate of strontium	30 grammes.
Flowers of sulphur	30 ,,
Eucalyptus oil	20 drops.
Cream of tartar, in fine powder	25 grammes.
Sugar of milk	40 ,,
Salicylic acid	10 ,,

Mix carefully.

—*El Memorandum.*

Mercuric Silicofluoride as a Bactericide.

In antiseptic action silicofluoride of mercury is, according to Hallion, Lefranc, and Poupinel the most powerful of all known substances. Experiments on cultures of various pathogenic bacilli show that this substance is at least twice as active as corrosive sublimate while it is, at the same time, less toxic. Experiments at the Bicbât hospital show that the silicofluoride in one per cent. aqueous solution or in a vaseline ointment containing 1 in 2000 has a remarkable and rapid action on surgical wounds, abcesses, eczema and other skin affections, without any appreciable drawbacks.—*Bull. Gen. de Thérap.*, cxxx., 379.

Eggs in Therapeutics.

According to the *Medical Record*, eggs are useful in the following applications:—A mustard plaster made with the white of an egg will not leave a blister. A raw egg taken immediately will carry down a fish-bone that cannot be extracted. The white skin that lines the shell is a useful application to a boil. White of egg beaten up with loaf sugar and lemon relieves hoarseness, a teaspoonful taken once every hour. An egg in the morning cup of coffee is a good tonic. A raw egg, with the yolk unbroken, in a glass of wine is beneficial for convalescents.

Nutritive Enemata of Cod-Liver Oil.

The following formulæ for these preparations for rectal alimentation are given in the *Journal des Practiciens*:—No. 1: cod-liver oil, 5 fluid ounces; yolk of one egg; lime water, 10 ounces. Sufficient for four or five enemata, which may be given during the day. No. 2: cod-liver oil, 5 ounces; yolk of one egg; salt, 40 grains; water, 10 ounces. No. 3: cod-liver oil, 1 pint; gum tragacanth, 35 grains; gum acacia, 1½ ounce; hypophosphite of calcium 35 grains; lime water to make 40 fluid ounces. From four to six ounces to be used for each injection.

CORRESPONDENCE.

The Bell Scholarships.

Sir,—"A Former Bell Scholar" uses an unfortunate term when he speaks of scholars as axiomatically "impecunious." I have had something to do with sundry scholarships up to the highest in our old universities. On one occasion I had to choose for one of my sons between a scholarship of £50 for three years or £30 for an indefinite number of years. For financial reasons I chose the latter, but the holder of the former had to pay a school bill of £45 or more for the first term, after the proportion of the scholarship had been deducted. That does not look like impecuniosity exactly; the word is too extreme. But one would not slay a man for a word. Scholarships are rather a recognition of, and reward for, distinguished work. "A Former Bell Scholar" has touched a point on which there is room for more information. A score years ago I read with gratification on a board, in gilt letters, at "the Square," the name of an old pupil of mine who won a Bell scholarship. In my simplicity I took it as a testimony to one who had distinguished himself in pharmacy, and not as an "excellent chemist and druggist."

Possibly we simple-minded countrymen labour under misapphrehension, but this is how it strikes one of us. The Bell scholarship is a matter of competitive examination. Competition stimulates study. I happen to know a probable competitor for a future "Bell." Botany is one of the subjects. In the course of this youth's studies he has won a first-class advanced (or teaching) certificate in the South Kensington examinations. Now, if he should win the Bell scholarship, would it be his duty and privilege to attend for ten months lectures on botany calculated to enable him to pass the examination that the poorest tool must pass before he can be a chemist and druggist" at all (not to say "excellent"); or would he be allowed to take the advanced course in botany? The same thing might happen in other subjects.

The mere preparation for the scholarship examination should lift a man above his fellows: a full term at "the Square" after that should fit him for the "Major"; or the question will arise, Is the game worth the candle? and is there not an examination of the pocket rather than the man, or at least in addition thereto?"

August 22, 1896. A Local Secretary.

Re the New Curriculum and the Jacob Bell Scholarships.

Sir,—I was very pleased to see that "A Former Bell Scholar" pointed out the altered position of the Bell scholars which the new arrangement of the classes has brought about. It will be a very great pity indeed if the scholars are unable to proceed to the advanced course and in due course enter for the Major examination and compete for the Pereira Medal and Redwood Scholarship. In looking over the results of the latter competitions one cannot fail to be struck with the fact that Jacob Bell scholars are generally the successful ones. Such results as these are surely worth the increased expenditure.

August 21, 1896. H. M. H.

The Treatment of Prescriptions.

Sir,—I have read with great interest your leader regarding stamping prescriptions on the front. I have at different times spoken to brother pharmacists on the matter, but they all seemed to think it best to continue to do so, only I think, because it acts as a kind of advertisement; now I should be glad to see it altered, as some of the stamps are very large, and also often cover some of the writing making it difficult to read, and lastly it is very unprofessional.

August 23, 1896. Major.

ANSWERS TO QUERIES.

Argentamine.—This may be prepared by dissolving ten parts of silver phosphate in one hundred parts of 10 per cent. aqueous solution of ethylene diamine. See *Pharm. Journ.* liii., 893, and lv., 363. [*Reply to* John Welsh.]

Urine Analysis.—Legg's 'Guide to the Examination of the Urine' (Lewis, 2*s.* 6*d.*) should serve your purpose. [*Reply to* A. C. B.]

Gelatin Pill Coater.—Apply direct to the inventor, Mr. J. Cocks, 8, Edgcumbe Street, Stonehouse, Devon, as we understand he has not yet appointed a wholesale agent. [*Reply to* V. S. and to A. H. E.]

Cellulose.—The paper you refer to was printed in full. Refer to Cross and Bevan's recently-published work on Cellulose (Longmans) for further information. [*Reply to* H. R.]

Skin Irritation Caused by Plant.—Such irritation may be caused by *Rhus toxicodendron*, a rambling shrub, or by *Primula obconica*, a green-house plant. [*Reply to* W. H. Galloway.]

Wire Gauze Cup.—Write to the Editor of *Invention*, Mitre Court, Fleet Street, E.C., explaining your contrivance. [*Reply to* G. W. Blythe.]

Dispensing Difficulty.—The deposit consists of insoluble ferric phosphate, and cannot be avoided if the prescription be dispensed as written. Try the effect of a few drops of hydrochloric acid, added after mixing the first three ingredients. [*Reply to* "Kox."]

Link Shell Truss Co.—A correspondent points out that the address of this firm is advertised in the District Railway carriages as 171, Wardour Street, London. Fortunately, perhaps, for you the District Railway with its attendant evils is not an available source of information in the Emerald Isle. [*Reply to* "Boval."]

Signs Used in Prescriptions.—The Apothecaries' weight, founded upon the Troy pound and ounce, is always to be understood in prescriptions. The sign ℥i. therefore stands for the ounce Troy, or 480 grains. The correct abbreviation to employ for the imperial ounce, used in the British Pharmacopœia, is "oz." [*Reply to* "Enquirer."]

Palæontological Botany.—There is no "exhaustive" treatise on fossil botany yet written. The best work on the subject is Professor W. P. Schimper's 'Traité de Paléontologie Végétale,' Vols. I.-III., 8vo, and 'Atlas,' 4to, 1867-74 (110 plates). Others are K. A. von Zittel's 'Handbuch der Palæontologie'; 'Palæophytologie,' by W. P. Schimper and A. Schenk, 1879-89; and 'Einleitung in die Paläophytologie,' by Count Sohns-Laubach, 1887. There are also about forty separate and special works on various branches of the subject. [*Reply to* L. A. Roberts.]

Liability for Overdose.—The British Pharmacopœia is not a legal standard of posology, but in a case where the official dose is appreciably exceeded, the dispenser should satisfy himself that there is no error in the prescription. Assuming that the dispenser has taken every possible precaution to guard against any mischance, the responsibility would then appear to devolve entirely upon the prescriber. But error or carelessness on the part of a prescriber would not justify negligent discharge of the pharmacist's duty. [*Reply to* "Cymro."]

CORRECTION.

The Testing of Quinine Sulphate.—On page 157, column 2, line 6, for "much less soluble" read "much more soluble."

OBITUARY.

Death of an Annuitant.

Harvey.—We regret to announce the death, on the 24th inst., of Charles Greaves Harvey, aged 83, Chemist and Druggist, of Levenshulme, Manchester. Mr. Harvey was elected an annuitant on the Benevolent Fund in 1891.

Davidson.—On August 22, James N. Davidson, Pharmaceutical Chemist, of Dundee. The deceased became a member of the Society in 1876, and commenced his career with Messrs. Duncan, Flockhart, and Co., of Edinburgh. After completing his apprenticeship he carried on a business in Elgin for nine years, from whence he removed to Dundee, going into partnership with Mr. John Gray.

Kay.—On August 24, Henry Kay, Chemist and Druggist, of West Bowling, Bradford. Aged 38.

Communications, Letters, etc., have been received from Messrs. Bateson, Bridges, Browne, Chattaway, Cocks, Cowley, Cox, Dodridge, Druce, Dutton, Gunn, Hallsworth, Hooper, Howie Hyne, Parker, Pollard, Reynolds, Roberts, H., Roberts, L. A., Sargeant, Southall, Strawson, Tennant, Thomas, Thorpe, Umney, Welsh, Woodward.

ROYAL COLLEGE OF PHYSICIANS 16 SEP 96 LIBRARY

DATURA ALBA.

BY FRANK BROWNE.

Acting Government Analyst, Hong-Kong.

In China the terms "Mán t'o lo fa," "Wan t'o lo hua," and "Nau yeung fa" are used to designate *Datura alba*, Nees. The flowers (flower-heads) of this plant are in considerable use amongst the Chinese as a medicine. The fresh leaves are applied to relieve pain. An infusion of the dried flowers is taken for convulsions, and for diseases in which a soporific is required. It is given as a soothing medicine to children. Moreover, as a stupefying agent it is resorted to for kidnapping, robbery, and for cheating in games of chance. For similar criminal purposes in India, *Datura alba* (the white-flowered Datura), *Datura fastuosa* (the purple-flowered Datura), and *Datura ferox* are employed by the professional poisoner, or Thug, and by the occasional criminal. As a stupefying agent the Chinese frequently give the flowers mixed with food, or place them in a tea-pot with tea, and thus administer an apparently harmless liquid, with taste and odour indistinguishable from tea. The characteristic features caused by the poison quickly manifest themselves. The victim suffers from dimness of sight, his gait is unsteady, he chatters unintelligibly, and laughingly grasps at imaginary objects (see *Pharm. Journ.* [3], xviii., 318). In all cases the pupils are dilated. The temperature of the patient invariably rises. In mild cases recovery takes place in from twelve to twenty-four hours. The power of memory, however, is lessened and is not recovered for several days (see also Chevers' 'Medical Jurisprudence for India,' 1870, p. 210).

Active Principle.—Two kilogrammes of the powdered flowers were treated, first, with alcohol of 84 per cent., secondly, with weak hydrochloric acid solution in water containing ·25 per cent. of real acid. The two solutions were evaporated to dryness, and the residues were extracted with the weak hydrochloric acid. Ammonia and pure chloroform were then added to the solution of the alkaloid. The chloroform solution was evaporated to dryness and the residue extracted with the weak hydrochloric acid. Ammonia and chloroform were again added, and the resulting, bright, yellowish chloroform solution on evaporation left a thick, brownish-yellow syrup of tobacco-like odour. This syrup was dried *in vacuo* over sulphuric acid, and a number of comb-like crystals appeared after a few hours. One mass of well-defined crystals of comb-like appearance was 12 M.m. long by 5 M.m. broad. The partly crystalline residue was converted into the gold salt. This was in brilliant, yellow, glistening crystals, some being more than 10 M.m. long and 2·5 M.m. broad, with one margin serrated. The melting point of this salt without further purification was 192°·3, which figure compared with those obtained after re-crystallisation indicates impurity. This impurity is attributed to a minute amount of resin, which is difficult to remove (see below). The substance was then re-crystallised from dilute hydrochloric acid. The melting point of the crystals deposited was 198° 0. These crystals were then re-crystallised three times in order to see whether the melting point was constant. The melting point of the three quantities of crystals obtained was 198°·0, 198°·5, and 198°·1 respectively. The substance becomes slightly darker within a degree of the melting point, and liquefies with decomposition.

1·2279 of the gold salt dried *in vacuo*, then heated for an hour at 100°, lost no portion of its weight, and the melting points before and after the heating were identical.

The gold salt was analysed:—0·4407 substance gave 0·5280 CO_2, 0·1584 H_2O, and 0·1378 Au. C = 32·68; H = 3·99; Au = 31·27. 0·4003 substance gave (by soda-lime) 0·0091 N. N = 2·27. $C_{17}H_{23}NO_3$, $HAuCl_4$ requires C = 32·48; H = 3·82; Au = 31·21; N = 2·23.

The alkaloid present in *Datura alba* is therefore hyoscine, and it is noteworthy that it should be present in this plant in such purity the unvarying melting points of its gold salt indicating a freedom from the presence of other alkaloids. Hyoscine melts at 196°-198° (Ladenburg).

Amount of Alkaloid.—Thirty grammes of the flowers was exhausted of alkaloid by the process given above. The resulting partly crystalline hyoscine was further purified by conversion into the hydrochloride, then precipitation from its solution in dilute acid by means of potassium per-iodide, and recovery by means of sodium thio-sulphate and chloroform. The gold salt of the alkaloid thus obtained melted at 197°·5 without re-crystallisation. The dried flowers were found to contain 0·485 per cent. of hyoscine.

Moisture and Residue after Ignition.—The flowers as sold have been sun dried. The amount of moisture in these is dependent to some extent on the season in which the estimation is made. In the dry season the flowers contained 11·29 per cent. of moisture and gave 13·77 per cent. of residue after ignition.

Other Principles.—For chemico-legal work it is desirable to be able to state definitely that the accused has used Datura to effect his purpose. This, however, is often attended with difficulty, as the substance submitted for analysis will in many cases consist of only a small quantity of an infusion of the flowers containing but a mere trace of alkaloid. From the flowers has been isolated a fragrantly smelling resin which is present in considerable quantity. Attention is at present being directed to this resin in order to find a characteristic test which may be employed for its detection.

WEIGHTS AND MEASURES.

When our French neighbours took in hand, with only too much energy, the reform of abuses so much needed at the end of last century, they had indeed much reason for a large portion of their work. But it is to be feared that their vivacity led them to conclude in many cases that everything that was new was of necessity good, and all that was old was of necessity bad. Amongst other things which went into the whirlpool of general change was a highly complex and perplexing series of weights, measures, and coins, as varied and uncertain as our own, and needing some well-considered re-arrangement quite as much. In that time of revolution the general tendency was to simplify such re-arrangements by blotting out all the old ideas so as to start the new system with a *carte blanche*, or, in view of the previous heroic destruction of the pre-existing, it might be better termed *tabula rasa*. While there is no question as to the need of reform in this department of measures and coins, we think there is some doubt which may be fairly entertained as to whether the new schemes adopted were the best which could be devised, and also we think not a little misconception in this country at the present day as to what those schemes really were, what they were intended to effect, and what they actually did bring to pass.

There being in France at that time a very passionate appeal to all that was "natural," it was not surprising that it should be proposed to take for the base of the new system some "natural" dimension, both for the sake of sentiment and also from the apparently obvious advantage that the said natural dimension would be perfectly stable and indestructible, and at all times and for all ages accessible for reference when required. The happy idea suggested itself that the quadrant of the meridian should be accurately measured and divided into 10,000,000 equal parts, each of which should be called a metre, and be the fundamental standard of all weights and measures. Naturally a quadrant was measured in France, and the operation was sufficiently laborious, but it is

now believed that it was not quite accurately accomplished, the error being about 1 in 6500, and besides, even if it were correct, it would be true only of that particular quadrant, for if the quadrant of another meridian were measured there would be no certainty that it would have the same length, or even another quadrant of the same meridian, say from the pole to the Equator (if that were possible). The measurement having been accomplished, whether with precise accuracy or not is of little consequence, a metallic bar was prepared which was and is the permanent standard of reference for the whole system of weights and measures. No one would for a moment dream of referring again to the quadrant of the meridian any more than we in this country would refer to the traditional "three barley corns" which are supposed to make one inch, and so to be at the base of our congeries of measures. It is extremely curious to contemplate the strange sentiment in favour of so-called "natural standards" shown not only in France, but in this and other countries also. Why should a measuring rod be any the better for its purpose because it is supposed to have some simple relation to the length of a quadrant of the meridian, or to that of a pendulum vibrating seconds? The notion seems to be purely sentimental, and in no sense of practical value. No doubt at one time it was thought important to adopt a natural dimension as a standard, because it was thought to be indestructible, and that if the actual "standard" derived from it was by accident injured, it could be recovered from the natural dimension by re-measuring the quadrant or the pendulum, but there is clearly no advantage in having the actual measure for use, either the length of the pendulum or exactly a 10,000,000th part of the quadrant. It would suffice that the measure should have some clearly defined relation to the natural standard, the actual dimension of the standard being decided on quite other grounds of general convenience. But no one now would attempt to recover a lost standand by reference to a natural dimension. The actual standard of the metric system is the standard bar of platinum in the International Bureau of Weights and Measures in Paris, and the English standard yard is the bar deposited at Westminster. Numerous copies of both of these have been made with the most scrupulous care, and all the refinement of the most delicate instrumental appliances, and the differences, if any, between these copies and the "standards" would be probably much less than the differences between successive measurements of a "natural" dimension. If, therefore, either of these principal standards were lost, its place would doubtless be supplied by taking one of the copies and simply enacting that for all purposes it should be taken as the ultimate "standard." These copies are so securely cared for in such divers places that it is inconceivable that all or even a considerable number of them should be simultaneously injured or destroyed.

It is clear, then, that the real primary standards are, in truth, arbitrary, being in the case of our yard, and also in that of the metre, certain bars of metal declared to be such by legislative authority. That the metre is approximately the ten-millionth part of the quadrant of the meridian, and was originally obtained as the result of an elaborate surveying operation, is a mere matter of sentiment, and has really no more importance than the tradition that our yard consists of thirty-six inches, each equal to "three barleycorns," or was the length of the arm of one of our monarchs. As has been well said, it would have served just as well to adopt the length of someone's walking-stick or that of the first paving-stone you see. All that is really necessary is that having adopted your standard it should be represented by a suitable bar, preferably metallic, and so arranged either with studs, lines engraved on it, or cleanly finished ends, that it can be used with precision in comparing secondary standards with it. But for practical use other considerations of convenience present themselves, and the measure must not only be exact and clearly defined, but it should be chosen, in the first instance, of convenient dimensions. A single denomination would not meet all the needs of life. It would not be convenient, although quite possible, to express the diameter of a wire as the fraction of a mile, or the speed of an express train in inches. Hence we employ several denominations for various purposes, as miles, yards, feet and inches, and in the same way that in France kilometres, metres, centimetres, and millimetres are used, according to the purpose in hand. In both cases the relations between the various denominations are accurately known, and we can readily pass from one to another. As to whether the English denominations or the French are the more convenient we shall speak presently. What applies to length applies also to measures of area and capacity, to weights and to coins. We speak of square miles, or acres, of gallons or cubic yards, of ounces or tons, or of pence or pounds, according to the subject and to convenience.

So far, then, as the actual standard is concerned, the position and functions of the English and French standards are similar, and any advantages or disadvantages possessed by the one or the other are matters not of kind but of degree.

When we turn to the relationships between the denominations in the two systems and the relations between measures of length, surface, capacity, weight, and of coins we find a different state of things and far more important contrasts.

For English weights we have three "systems." The avoirdupois by means of which by far the largest proportion of all weights is expressed, and having for its standard the Imperial Pound deposited in the Palace of Westminster. Above the "pound" we have the "quarter" of a hundredweight, consisting of twenty-eight such pounds, the "hundredweight" of four "quarters" and the "ton" of twenty "hundredweights." Below the pound, the ounce, one-sixteenth of a pound, and the drachm, one-sixteenth of an ounce. Hence the steps or radices by which we pass from one denomination to the other in this series are 20, 4, 28, 16, and 16. A denomination which scarcely appears in the use of these weights is yet extremely important, viz., the "grain," the standard "pound" being declared to be equal to "7000 grains." Although not in use in avoirdupois weight it is derived thus from the standard pound and becomes itself the standard or basis of the other two "systems," the troy and the apothecaries weights. The grain is therefore the only common denomination of the three systems, but in the avoirdupois weights, from which its standard is obtained, it has no simple relation except the pound, for an ounce is 437·5 grains and a drachm in 27·34375 grains. In troy weight, which is used for gold and silver and gems, twenty-four grains make a pennyweight, twenty pennyweights make an ounce, and twelve ounces a pound (troy). The radices here are 24, 20, and 12, and all the denominations are quite different from those in the avoirdupois system, although two of them, the ounce and pound, have the same names. In apothecaries weight we have the scruple, drachm, ounce and pound of 20, 60, 480, and 5760 grains, the radices being 20, 3, 8, and 12.

In measures of length we start from a new base, the standard "yard," also deposited in the Palace of Westminster, the denominations of the series being the mile, yard, foot, and inch, with radices 1760, 3, and 12. For measures of area we have the square inch, square foot, and square yard, but above these come the perch = $30\frac{1}{4}$ yards, rood = 40 perches, acre = 4 roods, the series of radices being 144, 9, $30\frac{1}{4}$, 40, and 4. For capacity we have three principal "systems"; that used by engineers and for similar purposes consisting of cubic yards, feet, and inches, and therefore simply related to the corresponding measures of length, and the radices the cubes of the linear radices, or 27 and 1728

that used for ordinary liquids, which has for its principal denomination the "gallon" with the sub-divisions quarts, pints, and gills, and the radices 4, 2, 4; and the apothecaries liquid measure with the same gallon and pint, but divided below this into ounces, drachms, and minims. These have of course a definite but not a simple relation to any measures of length or weight. The gallon is defined as ten Imperial (or avoirdupois) pounds of distilled water, which is equal to 277¼ cubic inches, or a cubic foot contains 6·2321 gallons. But while the apothecaries' gallon and pint are the same as the Imperial gallon and pint, it will be noticed that the gallon of ten pounds of water is divided into 160 "fluid ounces," which are avoirdupois ounces of 437½ grains of water, and so have no simple relation to the apothecaries' ounce weight. This fluid ounce is divided into eight drachms like the ounce weight, but the fluid drachm of water does not weigh one apothecaries' drachm, and the sixty minims which make such a drachm are not grains but $\frac{4375}{4800}$ of a grain.

In coins our standard is the pound sterling, with subdivisions shillings, pence, and farthings, the radices being 20, 12, and 4.

This has been, we fear, a wearisome account of strange and one would think often gratuitous complexity, but we have troubled our readers with it in order to make quite clear the main objections to all these so-called "systems," namely, that the denominations in each have no common radix; that these radices are in no case the same as that of our arithmetic; and that the various systems have no simple relation one to another.

Let us look briefly at these in order. If we have to add up a number of weights expressed in tons and subordinate weights we begin with the ounces, and having added them must divide the sum by sixteen before we can pass to the next column of "pounds"; the pounds being added must be divided by twenty-eight before passing to the "quarters"; the sum of the quarters similarly must be divided by four to obtain "hundredweights"; and the sum of the hundredweights by twenty to obtain tons. Everyone has had abundant and painful experience of this and of similar operations in each of the other "systems," including money. How much simpler it would be if each denomination was similarly related to that above and below it, and since our arithmetic has a radix of ten, clearly the simplest case would be that each denomination of weight or measure in each system was ten-fold the one below it, so that all operations with weights or measures were merely operations with numbers without need of special calculation or treatment in passing from one denomination to the next.

(*To be continued.*)

VICTORIAN ESSENTIAL OILS.*

BY JOHN C. UMNEY.

No. 1.—Oil of Anise.

The characters possessed by this oil are so strikingly different from those of the anise fruit (*Pimpinella anisum*) and of star anise (*Illicium anisatum*), that its source cannot be stated.

When a specimen of the seeds has been received from which it was distilled, and a botanical examination of these made, possibly the source can be determined.

The oil has a specific gravity of ·914 at 15° C., and an optical rotation of +16 in a tube of 100 M.m., and does not solidify when cooled to 4° C., and stirred. The oils of anise fruit and star anise have a specific gravity of about ·980-·990 at 15° C., are slightly lævo-rotatory, and solidify at about 14° C. The odour of the oil examined is more suggestive of fennel than anise, and although the specific gravities of the majority of oils of fennel are above ·950, some fall as low as ·920, and the rotations vary from +7 to +22 in a tube of 100 M.m.

It was thought possible that very cold, or even iced, water might have been used for condensation, and thus the congealing portion of the oil might have been held back in the worm of the condenser, but this does not appear to have been the case from a comparison of this oil with the liquid portion of anise oil.

Under these circumstances it is evident that it is not possible to place any commercial value on this oil, in the form, at any rate, in which it has been forwarded for examination.

No. 2.—Oil of Absinthe.

This oil possessed the dark-green colour usually found in commercial samples of oil of wormwood, and, after the removal of about 40 per cent. of alcohol with which it was mixed, had a specific gravity of ·939 at 15° C.

The specific gravity lies between that of the American and the English oils, which are usually about ·945 to ·950 and ·925 to ·930 at 15° C., respectively. The optical rotation of the oil could not be observed, owing to its dark colour, but the fractionation of it in comparison with a sample of pure American oil gave the following results:—

	Below 200° C.	200-205° C.	205-210° C.	Above 210° C.
Dunolly	4 per cent.	20 per cent.	28 per cent.	48 per cent.
American ..	15 ,,	12 ,,	14 ,,	59 ,,

The portion boiling from 200-205° C., which consisted principally of thujone, is slightly higher in this than in the American oil, but the oils are very similar in other respects.

Although oil of absinthe is not much used in this country, a considerable demand for it exists on the Continent of Europe and elsewhere, for the manufacture of liqueurs, etc., but it is very doubtful whether competition with the American and other oils could be successfully undertaken.

The present value of this oil from different countries is as under:—

American Wormwood Oil at per lb.	12*s.*
French ,, ,, ,, ...	20*s.*
German ,, ,, ,, ...	30*s.*

No. 3.—Oil of Boronia polygalifolia.

The oil of this, or of some other species of *Boronia* (Rutaceæ), has been used in this country for perfumery purposes, but no record exists of any detailed examination of it.

This specimen, derived from *B. polygalifolia*, possessed a sweet smell resembling tarragon, with a slight after-smell of rue. It was almost colourless and had a specific gravity of of ·839 and an optical rotation of +10. The following proportions were obtained by fractionation:—

150 to 170° C.	31 per cent.	180 to 190° C.	15 per cent.
170 to 180° C.	38 ,,	Above 190° C.	16

The ketone, which is characteristic of, and usually present to the extent of 70 to 90 per cent. in rue oil which boils at 225° C., does therefore not exist in any quantity in this oil, and no crystalline compound could be obtained from the highest fraction of the oil by treatment with solution of sodium bisulphite. It would be interesting to carry out a complete chemical examination of the oil, as it could be largely employed for perfumery purposes, its smell being decidedly agreeable, and capable of improvement by judicious blending.

* Samples of essential oils and essences having been received by the Scientific Department of the Imperial Institute from the Government Flower Farm at Dunolly, Victoria, they were submitted to Mr. J. C. Umney, of the firm of Messrs. Wright, Layman, and Umney, who has reported on their character and probable commercial value.—*Imperial Institute Journal.*

No. 4.—Oil of Eucalyptus citriodora.

The specimen possessed the powerful citronella odour characteristic of this particular variety of eucalyptus oil, for which the use in this country has fallen far below general expectations.

It had a specific gravity of 15° C. of ·8809, and an optical rotation of −1 in a tube of 100 M.m.

Fractionation yielded the following percentages:—

190–200° C.	76 per cent.
210–219° C.	12 „
Residue	12 „

The aldehyde, citronellon, to which the odour of the oil is due, was estimated by acid sodium-sulphite, and found to be present to the extent of 90 per cent. The oil showed no trace of eucalyptol by the phosphoric acid test.

This oil may be classed as of fine quality, but it has no medicinal value, and doubtless it cannot be produced, for soap and perfumery purposes, to compete with citronella oil, which it so closely resembles. It must be noted, however, that citronella oil contains, in addition to the aldehyde citronellon, a considerable percentage of geraniol, which modifies the odour of the oil.

The present market value of pure citronella oil (not easily obtainable) is 3*s.* per lb., but it has been sold at half this price when the supplies in the port of London have been abnormally heavy. The fluctuations in eucalyptus oils (including *var. citriodora*) have been considerable. At the present time it is probable that sales could only be made with great difficulty at 1*s.* 6*d.* per lb.

Nos. 5, 6, and 7.—Essences of Jonquille, Millefleurs, and Tuberose.

These particular samples of essences are of no value whatever for perfumery purposes, as their degree of concentration is insufficient, and as the spirit with which they are prepared is not odourless enough for such delicate uses.

No fat could be separated from them by freezing, and it is doubtful, therefore, whether they had been prepared by the usual method, viz., by alcoholic extraction from pomades, as made by "enfleurage" in Grasse (France), and elsewhere. The aroma of the jonquille is decidedly good, and the tuberose fair: the millefleurs essence is, however, quite spoiled by the presence of sage or absinthe, which mask the other more pleasant odours.

It would be well to prepare, by the enfleurage process, pomades of the greatest possible saturation with the purest fat obtainable, and to produce, from these, fresh samples of essences by extraction with the purest and most odourless alcohol of 90 per cent. strength.

Nos. 8 and 9.—Oil of Rose Geranium and Geranium of Africa.

These oils possess so many characters in common that they may be conveniently considered together. The oil of rose geranium was green in colour (although no trace of copper could be detected); it had a specific gravity of ·906 at 15° C., and an optical rotation of −14·25 in a tube of 100 M.m.

The oil designated as geranium of Africa was yellowish-brown in colour, had a specific gravity of ·902 at 15° C., and an optical rotation of −7·5 in a tube of 100 M.m.

These specific gravities and optical rotations correspond with those of oils known respectively as oils of rose geranium of Grasse and geranium of Africa (Algeria), distilled from pelargonium-species cultivated in those districts.

The amount of geraniol present, as alcohol and in the form of esters, was determined, and the results are tabulated below in comparison with commercial oils of the same types:—

	Specific Gravity at 15° C.	Optical Rotation in a tube of 100 M.m.	Total Geraniol.
Dunolly Rose Geranium	·906	−14·25	51·8
„ Geranium of Africa..	·902	−7·5	62·4
French Rose Geranium	·894	−10 75	57·1
Algerian Geranium.....	·898	−7·5	69·6

From these figures it is apparent that the oils show no great deviation from the usual types of French and African geranium oils, the market value of which at the present time are, for the Grasse oil, 35*s.* per lb., and for the Algerian oil about 22*s.* per lb.

No. 10.—Oil of Lavender.

The specimen contained no added alcohol, was very pale yellow in colour, and possessed the pungent cineol odour of English lavender oil, although distinctly less pleasant in smell. Its specific gravity was very high—·916 at 15° C., and its rotation +11 in a tube of 100 M.m.

These two characters pointed to the possibility of the oil having been distilled from an admixture of "true" and "spike" or other lavenders, for whilst pure English lavender oil distilled from *Lavandula vera* has a rotation of from −6 to −10, and a specific gravity of ·885 to ·900, the oil of "spike" lavender has frequently a rotation of +7, and a specific gravity as high as ·920, and the oil of *Lavandula dentata* has an even higher specific gravity, up to ·940.

The oil yielded on fractionation the following percentages:—

Boiling from 175–190° C.	44 per cent.
190–205° C.	42 „
Residue	14 „

The proportion of esters was determined and found to be only 5 25 per cent., being below that of most samples of English lavender oil, which vary from 7 to 10 per cent.

The determination of the alcoholic constituents ($C_{10}H_{18}O$) showed the presence of 29·75 per cent., the proportion found in the oils of *Lavandula vera* being usually not less than 45 per cent., whilst in the oil of *Lavandula spica* it is usually considerably lower.

The above seems to throw doubt upon the species of lavender from which the oil has been distilled, a mixture of *Lavandula vera* and *Lavandula spica* seeming possible. The effect of climate and soil upon lavender oil, as shown in English and French oils respectively, may also not be without some significance in this case.

The value of the oil, based on the examination of this sample only, is difficult to estimate, for whilst pure English lavender oil, distilled at Mitcham (England) from cultivated and unmixed plants of *Lavandula vera*, is at the present time, on account of great scarcity arising out of the severe winter of 1894-5, worth 85*s.* per lb., a low grade of French lavender oil, consisting of a mixture of the oils of true and spike lavender, with which this would be most fitly compared, is worth about 3*s.* 6*d.* to 4*s.* per lb.

No. 11.—Oil of Lemon Thyme.

This oil possessed a pale straw colour, and, after removal of about 20 per cent. of added alcohol, had a specific gravity at 15° C. of ·898, and an optical rotation of −3 in a tube of 100 M.m.

As no recorded examination of this oil could be found, a quantity of the oil was distilled from fresh lemon thyme, the characters being almost identical with those of this sample.

Fractionation of the oil gave the following percentages:—

210-220° C.	28 per cent.
220-230° C.	54 „ „
Above 230°	18 „ „

The fraction boiling from 210 to 220° C. consisted almost entirely of citral, the total percentage of aldehyde present in the oil, shown by sodium bisulphite, being 21 per cent. The fraction from 220 to

230° C., treated with solution of caustic soda, showed a considerable proportion of phenols, principally, if not entirely, thymol. The oil is not used commercially in this country in any quantity, and its value is therefore comparatively small.

No. 12.—Oil of Myrtle.

The botanical source of this oil being no more definite than the above title, considerable doubt existed as to its identity with the oil distilled in France, Spain, and Corsica, from *Myrtis communis*. Chemical examination shows, however, slight similarity between the oils. The specific gravity of the sample was ·926 at 15° C., and its optical rotation −4, in a tube of 100 M.m. On fractionation, 28 per cent. of non-volatile residue was obtained, which solidified on cooling, and was found to consist of a mixture of a substance having the properties of caoutchouc with a wax having a melting point of about 45° C. When this substance was removed from the oil, its specific gravity was found to be ·916 at 15° C., and it was slightly more lævo-rotatory. The following table shows the results obtained by comparison of this purified oil with two samples of French distillation.

Distilled in	Specific Gravity at 15° C.	Rotation in a Tube of 100 M.m.	Fractionation.			
			Below 170	170-185.	185-200.	Above 200.
			Per cent.	Per cent.	Per cent.	Per cent.
Dunolly	·916	− 5	18	9	20	43
France 1	·885	+25	78	16	4	2
France 2	·893	+24	56	24	6	14

The proportion of dextropinene present in the French oils is very considerable, but the fraction boiling at from 170° to 185° C., in all the oils, contains cineol.

The oil has been used on the Continent on account of this constituent, but appears to have been quite superseded by the eucalyptus oils of far greater cineol content. It is doubtful whether this oil can be said to possess any market value, and obviously a modified method of distillation would have to be adopted before its use could be recommended.

(*To be continued.*)

THOMAS BEESLEY.—A BIOGRAPHICAL SKETCH.

BY G. C. DRUCE, M.A., F.L.S.

By the death of Thomas Beesley, on May 15, 1896, a well-known scientist was lost to pharmacy. He was born on March 28, 1818, at Banbury. After his apprenticeship he commenced business in 1844 as a chemist and druggist, at Chipping Norton, in Oxfordshire, and in the same year married Miss Sarah Rusher, of Banbury, who survives him. He joined the ranks of scientific workers at an early age. On the retirement of his uncle, Mr. Henry Beesley, he succeeded to the old-established chemist's business carried on at 5, High Street, Banbury. Here Mr. Beesley carried on the business until his retirement in 1887. The premises were large and the house commodious, so that Mr. Beesley had opportunity to carry out his scientific investigations, and to amass a very considerable collection, illustrating the geology of the district, as well as an extensive library, a herbarium of British plants, etc. In 1840 he joined the Mechanics' Institute Committee, and assisted at the exhibition held at Banbury in that year. In 1854 he was elected a member of the Board of Health, and was chosen Chairman in 1856.

In that year he gave a lecture in the Town Hall on the chemistry of water, which was attended by over four hundred people. In 1875 he was made a magistrate for the borough of Banbury. The science and art classes in connection with South Kensington found in Mr. Beesley a warm supporter. In 1861 he obtained a first grade certificate in inorganic and organic chemistry, and shortly after started a class in that science in his laboratory, commencing with ten pupils, all of whom were successful in the subsequent examination. He also obtained certificates in several other subjects, and additional classes soon followed. Among his pupils was Alfred French, whose botanical zeal was fostered, if not formed by Mr. Beesley. French contemplated writing a Flora of Oxfordshire, and while an employé at the British Museum devoted much time to collect material. His death, while comparatively young, prevented the accomplishment of that object. The writer purchased the MSS. of his widow, and it has been incorporated in the Flora of that county, which has been published. French's plants are in the British Museum.

Mr. Beesley's love of botany was of much earlier date, for we find that he contributed a list of plants to the 'History of Banbury,' which was prepared by his uncle, Mr. Alfred Beesley, in 1841. This list, comprising nearly 500 species, besides a large number of Cryptogams, was largely quoted by Mr. Watson in his valuable 'Topographical Botany'; in fact, it was the chief source of the records from Oxfordshire in that work. Mr. Beesley's additions to the Oxfordshire flora include *Teesdalia nudicaulis*, *Polygala serpyllacea*, *Hypericum calycinum*, *Alyssum calycinum*, *Melilotus alba*, *Arctium minus*, *Potamogeton alpinus*, *P. interruptus* (*flabellatus*), *Cuscuta trifolii*, etc. His herbarium has been recently presented to the writer. It contains many specimens sent out by the London Botanical Exchange Club, and most of the species enumerated in the list of Banbury plants. Among the local rarities are *Anemone pulsatilla* and *Astragalus danicus*, from the neighbourhood of Chipping Norton, now both almost certainly extinct in the locality cited. *Potamogeton alpinus* (*rufescens*) is correctly named; it is one of the plants not yet found by the writer in the county. Here it may be well to say how generously Mr. Beesley treated the writer when he was compiling the 'Flora of Oxfordshire,' as he readily lent him all his MSS., and was good enough to copy out his Northamptonshire records, which the writer has found very useful in compiling the 'Northamptonshire Flora,' which has appeared in the 'Natural History Journal' of the county.

In later years Mr. Beesley's attention has been more especially directed to geology; in 1872, he contributed a valuable paper on the geology of the neighbourhood of Banbury to the annual meeting of the Warwickshire Naturalists' and Archæologists' Field Club, and the paper was afterwards reprinted in pamphlet form. In 1873 the Geologists' Association held their annual gathering in Banbury, and Mr. Beesley was appointed to act with Professor Morris as conductor. Mr. Beesley's report of the excursion was afterwards reprinted in pamphlet form, as was also a paper on the 'Geology of the Eastern Portion of the Banbury and Cheltenham Railway,' which he had contributed to their Transactions in 1872. Still more recently he was engaged in making an extensive collection of Belemnites and other fossils from the lias of Fenny Compton. These he has catalogued to the number of 325 species. Since his death the collection of fossils has been examined by Professor Green, of Oxford, and the more typical ones selected to be added to the University Museum. Professor Green expressed to the writer the highest appreciation of Mr. Beesley's painstaking industry and scientific acumen. Sadly enough it was almost the last work of our kind-hearted and genial professor, whose premature and comparatively sudden death is of such recent date. For some years Mr. Beesley acted as Secretary to the North Oxfordshire Archæological Society, to which he made some valuable contributions, besides exhibiting numerous relics and articles of interest to its meetings. Last July the venerable President, Sir Henry Dryden, told the writer how much he valued Mr. Beesley's opinion. In addition, he took considerable interest in meteorology. For many years he con-

tributed to the *Banbury Guardian* (to which the writer is indebted for the greater part of the information given in this memoir) a regular and complete series of meteorological registrations. Astronomy numbered him as a votary, and he related with great enthusiasm his glimpse of the transit of Venus in 1882.

To give an instance of his mental activity, we may mention that in 1866 he matriculated at the University of London, being placed twelfth in the honours division. Mr. Beesley was not only a chemist and druggist, but an analyst of repute, and he was extensively consulted. One of the cases in which he was employed was that in which a shopkeeper in the Midlands had been summoned under the Adulteration of Food and Drugs Act, which had recently been passed, for supplying adulterated coffee. A report of the case will be found in this Journal, 1874–5, p. 881. In opposition to the county analyst's statement that the sample contained 20 per cent. of acorns, Mr. Beesley asserted that the coffee was pure. A third sample was sent to Dr. Letheby, who corroborated Mr. Beesley's analysis. Subsequently the county analyst admitted that his apparatus was out of order, and he soon resigned his appointment.

The case excited very considerable local excitement, and Mr. Beesley gained a good deal of kudos by his detecting the error and preventing the punishment of innocent people, one of whom consulted the writer, who suggested Mr. Beesley as an analyst who might be relied on to conduct the defence.

In 1881 the Banburyshire Natural History Society and Field Club was inaugurated, and Mr. Beesley was elected the first president. The Society started with a considerable roll of members, to which the writer had the pleasure of giving on introductory address at its annual meeting after the resignation, through ill-health, of its president, since which time he practically confined his attention to geology. We thus see that in Mr. Beesley we have lost a many-sided man, who would reflect credit on any profession, but who never was ashamed of the calling he adopted. Although less known to pharmacists than Henry Deane, William Stoddart, and Henry Groves, he may certainly be classed with them in his wide range of knowledge, while his home life led to the greatest respect being shown to him by his own townsmen, who felt proud of their industrious and talented citizen. He is buried in Banbury cemetery.

THE CALCUTTA BOTANIC GARDEN.

The weather of the official year 1895–96, Dr. King writes in his annual report, was remarkable for the great dryness of the months from October to March. The result of this excessive dryness on the plants growing out of doors has been disastrous. In spite of all efforts in the way of artificial watering, many small plants have died, and many trees, even of large size, will be disfigured by the loss of branches which have withered. The excessive dryness of the air during the few weeks when the majority of the orchids came into bloom had the double effect of reducing the size of these beautiful flowers, and of hastening their withering. The flowering trees out of doors were also stimulated into putting out unusually large numbers of blossoms of smaller size than usual. During the year an interesting addition to the garden trees was made in the shape of a rooted cutting of the sacred Bo tree of the temple at Budh Gaya, under a predecessor of which Sakya Muni, the founder of the Buddhistic faith, lived and taught. The interesting historic and religious relic was presented by Mr. G. A. Grierson, Ph.D., lately magistrate of Howrah. It has been planted on an island in the large lake near the big banyan, from which, when it grows up, it will be well seen, and at the same time it will not be easily accessible.

At the request of the reporter on economic products to the Government of India, patches of two species of *Sida* were cultivated in the garden, with the view of testing the value of their fibres for weaving and cordage. The crops grown on these patches were made over to the officer just mentioned. At his request also quantities of young plants of *Adhatoda vasica* were prepared in the nurseries for issue to tea-planters, a decoction of the leaves of this plant having a popular reputation as a powerful insecticide. A few experiments were made in the nurseries by the curator, Mr. R. L. Proudlock, with the view of testing the merits of this decoction. The results, however, were of a somewhat doubtful nature. The demands for *rhea* plants were less numerous than in former years, and the distribution during the year was proportionately small. Many hundreds of fruit and timber trees were issued to public officers in all parts of the province. The director of Land Records and Agriculture, having been for some time desirous of obtaining a botanical report on the various races of wheat grown in Bengal, and being unable to supply adequate material for a study of the subject, it was suggested that a portion of the Shibpore Experimental Farm should be devoted during the cold weather of 1895 96 to raising wheat from samples of seed supplied from the various wheat-growing districts. This suggestion was acceded to by Mr. Macpherson, and Dr. Prain has during the cold season made observations on the samples of wheat grown in the plot of ground thus placed at his disposal. His report on the races grown, and on their relationship to the names they bear in the different districts will be in the hands of the Director of Land Records and Agriculture at an early date.

Work in the Herbarium was carried on with vigour: and during the year 17,403 specimens were received, while 11,093 carefully-named specimens of Indian plants were issued to various scientific institutions all over the world. The chief donors to the Herbarium were the Director of the Royal Garden, Kew, who contributed 1974 specimens, and the Keeper of the Botanical Department of the Natural History Museum, London, who transmitted 1129 duplicate specimens not required by that institution.

The Lloyd Botanic Garden, Darjeeling, was worked during the whole year by the Curator, Mr. W. A. Kennedy, who, besides his duties in the garden, has charge of the shrubbery grounds and of the trees planted in various parts of the station. During the year Mr. Kennedy carried out various improvements on the roads and conservatories within the garden. A very remarkable plant was added to the Darjeeling garden during the year, namely, a gigantic specimen of the beautiful Australian fern, *Todea barbara*. This plant was the personal gift of the distinguished botanist, Baron Ferdinand von Mueller, K.C.M.G., F.R.S., who for many years has been the highest authority on the botany of the Australian colonies. Baron von Mueller has in past times presented many valuable plants to the Calcutta Garden, but this, his latest gift, outrivals all his previous contributions. The *Todea*, which now adorns the Darjeeling Garden, was removed by the Baron at his own expense from a lonely valley far distant from his residence in Melbourne. It weighs upwards of half a ton, and ought, when it has had sufficient time to expand its leaves, to form a magnificent object.—*Indian Pharmacologist.*

NASCENT CARBONIC ACID IN BLENNORRHAGIA.—Piéry has found the local application of nascent carbonic acid gas of use in the treatment of blennorrhagia in females. A mixture of 7 parts of sodium bicarbonate, and 6 parts of tartaric acid is introduced into the vaginal cavity either enveloped in gauze or directly by means of the speculum, or in the form of cocoa butter pessaries (*Répertoire* [3], vii., 307, after *Lyon Medic.*).

AMERICAN PHARMACEUTICAL ASSOCIATION.

MEETING AT MONTREAL.

SPECIAL REPORT OF EXCURSIONS, ETC.

THE opening of the fourty-fourth annual meeting of the American Pharmaceutical Association will long be remembered by those who gathered in the parlours of the Windsor Hotel, Montreal, on the afternoon of August 12, 1896. In spite of swelter, early in the day the hotel rotunda was decidedly pharmaceutical, and everywhere was seen the tasteful maple-leaf badge designed by the Local Committee for the occasion. Discouraging heat did not prevent the President from promptly opening the afternoon session, some 250 members and delegates facing him.

This gentleman, Mr. J. M. Good, of St. Louis, U.S.A., has been prominent in pharmaceutical circles for some years. He was born in Bucks County, Pennsylvania, fifty years ago, and like the majority of American boys, started his education in the public school of his native county. From this he passed through "the high" into the normal school, where he qualified as a teacher. Following that profession for a time he finally entered the ranks of pharmacists by graduating from the St. Louis College of Pharmacy, and now holds a professorship in the same Institution. Besides conducting one of the leading pharmacies of the city, Mr. Good has taken an active interest in association work since 1871, has been vice-president once, and several times member of the Council.

A short afternoon session to hear the President's address and register delegates gave way to the first social function of the meeting, a reception tendered the visitors by the officers of the provincial institution and their ladies, a most enjoyable occasion, the cool of the evening being a most grateful relief after the intense heat of the day.

This delightful variation of labour and entertainment has been sustained throughout the meeting. The active worker in the business session, as well as he "on pleasure only bent," threw aside the profoundity of scientific lore and legal intricacies and joined in the various trips and excursions on boat and car, so thoughtfully provided by the Local Committee of Management.

The second day opened with a promise of better treatment by "Father Sol," which promise was faithfully kept, and a delightful sample of our Canadian climate was meted out to the guests for the balance of their stay.

On Tuesday night Mr. Seabury and commercial interests were abandoned for an excursion twenty miles down the St. Lawrence, where a *fête de nuit* was held. Those who went were well repaid the journey by a sight not often witnessed outside a French community; for miles both banks of the river were illuminated by pretty designs in various coloured Chinese lanterns and fireworks, while the surface of the river was alive with fleets of small craft, darting and shooting hither and thither all ablaze with rainbow hues, all producing an effect most enchanting, but indescribable. The next day's outing was an electrical car trip through and around the city, and with the unseen forces of nature hitched to our whirring car we rolled along well-paved streets and tree-lined avenues. One is struck by the air of general prosperity everywhere, the business portion with its narrow, crowded streets, the dock-lined water front crowded with vessels of every description and size, and the houses of the wealthy. To quote the remark of a man of travel and experience—"Montreal has more wealth in proportion to its size than any other city on the Continent." The strange mingling of the old and the new is here noticeable. In some sections it is hard to realise that one is still in Canada; the characteristics of the English and French occupation are so marked. In Place d'Armes stands the statue of the city's founder, Maisonneuve. The scenes depicted on its base recall the age of chivalry and devotion when men left home and friends for country and church, and in strange lands laid the foundation of what they fondly hoped would be a new France or a new England.

But we linger on low ground while the mountain invites. How grandly is the city situated—enclosed in front by the sweep of the stately St. Lawrence, its terraced buildings rise tier on tier to its crowning glory, Mount Royal. Ascending the mountain by many a winding way, we reach the summit and turn to view the panorama below. What a glorious scene—no fairer ever spread itself before the gaze of man! At our feet is the city, verdure clad and beautiful, its domes and spires glinting in the sun, the palatial home of the merchant prince, the meaner dwelling of the poor, broad avenues and parks, and beyond all the great watery highway with its line of docks and ships. It is with reluctance we withdraw our gaze from the enchanting scene, but a declining sun warns us that there are more sessions to attend, more reports and papers to discuss.

Saturday's struggle with science, education and legislation made the day "devoted to rest" (to quote the programme) most welcome. Ten a.m. Monday saw a rested and merry crowd on the decks of the "Bohemian," prepared for the trip up the canal, around Lake St. Louis, and a "shoot down the rapids," this last experience being eagerly anticipated; so when the cry "she is turning" was heard, all was expectancy. With a broad sweep the steamer wore round for the return. Down past the romantic Indian village of Cock-na-waga, under the bridge we glide, already we are in the swirl of water. The engine stops, but we rush madly along, borne by the rushing boiling flood. Four sturdy Indian pilots at the wheel control our mad career, the gaze of their black eyes straight ahead. See them spin the wheel with lightning rapidity as we are making straight for that rock ahead. What if a rudder chain should break! How the staunch boat trembles as we plunge into the seething chaldron of dark-green water rushing, tumbling, foaming into swirls and eddies. Another plunge, another lurch, again she rights herself, and we glide into smooth water and breathe easier.

The series of entertainments is brought to a close by a concert in the hall of the hotel on Monday evening. Tuesday morning, the last session finds us again at the table. For this final session there is a gathering of tired delegates hastening through the final work, glad that it is over; yet not sorry they came. Officers are installed, and the affairs of the Association entrusted to them for the year, a trust to be rendered up again at Lake Minnetonka, where we hope to assemble again, an unbroken circle. So we scatter, some to Ottawa, some to the Saguenay, some to the Adirondacks, and so concludes one of the most pleasant and profitable meetings of the A. Ph. A.; satisfied that, as a city of hospitality and enjoyment, Montreal stands unsurpassed.

SUMMARY OF THE CHIEF PAPERS READ.

Poisonous Honey. The report of a case of poisoning by honey at Princeton, N.J., has led L. F. Kebler to investigate the subject. He prefaced his report with references to recorded cases of poisoning by honey, Xenophon, Strabo, Dioscorides, Diodorus Siculus, Aristotle, Pliny, Tournefort, and other writers being quoted. Two persons who had partaken of the Princeton specimen suffered from vomiting, purging, and acute gastric and abdominal pain, followed

by loss of consciousness, coldness of extremities, feebly acting heart, and complete collapse, whilst recovery did not take place for several hours. An alcoholic extract of the honey caused similar symptoms when administered to cats, but on examination no traces of alkaloids or any inorganic poison could be detected. Probably the poisonous principle is derived from species of Ericaceæ, many of which contain the potent poison andromedotoxin, but the indications of the presence of that compound in the honey were not sufficiently definite to justify a positive conclusion.

Canadian Potash. Dr. T. D. Reed pointed out that recent statistics show a slight increase in the manufacture of potash in Canada. During 1895 the quantity passing under observation included 415 casks of "pearls" and 1904 of "pots," containing 1,500,000 lbs. The product was practically free from sodium, but in one instance silicate stones were found embedded in the cakes.

Gelatin Capsules. A brief history of gelatin capsules has been compiled by W. C. Alpers, who ascribes their invention to A. Mothes, a French pharmacist. They were introduced in 1833, and were first used for the direct administration of copaiba or its volatile oil. A small olive-shaped pouch made of soft skin served as a mould, being filled with mercury to expand it, then dipped into a mixture of gelatin and water (1:3), and rotated after removal until dry. The mercury was then poured out and the pouch withdrawn. The originator of metallic moulds, such as are now used, appears to have been Alfred Guillon, a graduate of the Philadelphia College of Pharmacy, who described his apparatus in 1837. In the second part of his paper the author dealt in a practical manner with the filling of capsules, but as the matter does not admit of useful abstraction, the paper will be published in an early number of the *Pharmaceutical Journal*.

Medicinal Solid Mixtures. C. S. N. Hallberg dealt with mixtures of solids for internal use, including under this head troches, powders and pills. The first term he employs to cover lozenges, compressed tablets, pastilles, etc., etc., intended to dissolve slowly in the mouth so as to secure a prolonged local effect upon the throat and respiratory organs. Pills, on the other hand, he pointed out, are intended for slow solution and retarded absorption in the stomach or intestines, whilst powders should be quickly dissolved and absorbed, or produce a local effect readily. Astringents, antacids, expectorants, pulmonary sedatives, demulcents, emollients and vermifuges are advantageously administered in the form of troches; emetics, diaphoretics, sialogogues, antipyretics, sedatives, narcotics, hypnotics, tonics and antiperiodics as powders; and tonics, hæmatinics, bitters, iron compounds, stomachics, hepatics, purgatives, laxatives, cathartics, anthelmintics, ecbolics, emmenagogues and antispasmodics as pills.

Alcohol in Volumetric Determinations. C. Caspari is of opinion that far more accurate volumetric determinations of alkaloids and alkaloidal residues can be made by using water alone in place of mixtures of the same with alcohol, and that the error caused by the latter is augumented as the proportion of alcohol is increased. The alcohol appeared to him to influence the colour produced by acids and alkalies with different indicators, in the titration of alkaloidal residues, and a series of experiments was therefore made in order that the nature of the changes observed might be more closely studied. The results proved that alcohol exercises a decided influence on colour indicators, and may be a fruitful source of error in volumetric work. It appears to play the part of an acid towards hæmatoxylin, cochineal, Brazil wood, lacinoid and litmus, whilst it seems to lend a strong alkaline reaction to methyl orange or tropæolin 00. Alcohol should therefore be rigidly excluded in the titration of alkaloidal residues wherever accuracy is desired.

Origin of Petroleum. Some results obtained in the destructive distillation of linseed oil have suggested to Professor Sadtler that Engler's theory regarding the origin of petroleum may have to be widened so as to include vegetable oil-seeds as additional sources of petroleum. Professor Engler showed in 1893 a refined burning oil and scale paraffin obtained by him from fish oil, and Sadtler has prepared corresponding products from linseed oil. The presence of petroleum-like oils in "boiled oil driers" has generally been assumed to be due to adulteration, but it is now proved that this is the natural result of boiling the linseed oil under pressure, in such a manner that considerable quantities of the liquid distillate are condensed and returned to the still.

Rhamnus Purshiana. In a contribution from the Research Committee of the American Pharmaceutical Association, read by J. N. Lloyd, the history of *Rhamnus purshiana* was sketched. The bark was introduced to the medical profession in 1877 by Dr. J. H. Bundy, of Colusa, California: the fluid extract was made by Parke, Davis and Co. in the following year. Dr. J. C. H. Adair, of Colusa, about the same time furnished the botanical specimens that established the botanical origin of the drug.

Phosphoric Acid Determination. W. A. Packner and F. Julian described the following method for the determination of phosphoric acid in soluble ferric phosphate, U.S.P. Weigh 1·5 Gm. iron phosphate, introduce into a Kjeldahl digestion flask, dissolve in 25 C.c. water, add 10 C.c. concentrated nitric acid and 3 C.c. strong hydrochloric acid, and boil until reduced to 5–10 C.c.; transfer to a beaker, washing the flask with about 25 C.c. water, and add 250 C.c. molybdate solution, then digest at 40° C. for four hours. Decant the clear liquid through a small filter, and wash the precipitate, retaining as much as possible in the beaker, with several small portions of dilute molybdate solution, until the filtrate remains clear, after making alkaline with ammonia, and therefore is free from iron; three portions of 15 C.c. are usually sufficient. The phosphomolybdate of ammonia is now to be dissolved in 25 C.c. 10 % ammonia water. This is best accomplished by pouring the ammonia water on the filter containing a portion of the yellow precipitate, and allowing it to run into the beaker containing the bulk of it; when solution has taken place, it is filtered through the same filter, into a beaker, and the first beaker and filter washed with 75 C.c. of water. Now 25 C.c. magnesia mixture is added, at the rate of 50–100 drops per minute and with constant stirring. After standing eight hours the precipitate is transferred to a Gooch filter, using portions of the filtrate for the purpose, the precipitate is washed with 2½ per cent. ammonia, until free from chlorides (25 C.c. is usually sufficient), dried thoroughly at 100°–120° C., then gradually heated to bright redness, retained at that temperature for fifteen minutes, cooled, and weighed.

Constituents of Taraxacum. L. E. Sayre has specially studied the bitter principle of taraxacum, which, he finds, is soluble in cold water, very soluble in hot water, or alcohol, ether, and chloroform, The aqueous solution is straw-coloured and intensely bitter. All attempts at crystallisation proved unavailing, but the gummy extractive, when allowed to deposit in a thin film on crystallising dishes, showed under the microscope acicular crystals of arborescent and stellate forms. These were proved to be the result of oxidation, and by repeatedly dissolving the gummy, bitter, uncrystallisable substance in hydrogen peroxide the

whole mass was converted into similar crystals, which proved to consist of oxalic acid. The bitter principle is extremely sensitive to all alkaloidal reagents, unites with phosphomolybdic acid to form a sparingly soluble compound, and shows some indication of being a glucoside. After treatment with ammonia it is rendered more soluble in water than in chloroform, the reverse of its original condition. Besides this bitter principle, two resins have been separated from taraxacum, one soluble in chloroform and insoluble in alcohol, the other soluble in 80 per cent. alcohol.

Antitoxin Treatment.

A communication from Dr. C. T. McClintock embodied a concise account of the origin, principles, and applications of serum therapy. Antitetanic, anti-streptococcic and anti-diphtheritic serums were separately referred to, the last-named receiving the lion's share of attention, and the author's views may be summed up as being unreservedly in favour of the serum treatment.

Caffeine in Kola.

A lengthy communication on the caffeine compound in kola was contributed by J. W. T. Knox and A. B. Prescott, who have worked out a plan of assay for the drug, which is especially intended to avoid many common causes of error. By the exercise of ordinary care and judgment this method for the determination of caffeine gives extremely accurate and satisfactory results, while with a little practice it admits of very rapid work. The sample is prepared by slicing a sufficient quantity of the fresh seeds in thin, papery slices, allowing them to fall into a beaker of boiling alcohol. Remove the slices after a few moments' boiling, and allow them to dry spontaneously on clean glass plates. Distil the alcoholic solution, under reduced pressure, to a syrupy consistence, and pour it on the sliced drug now being dried, rinsing the flask with successive small portions of alcohol. When dry remove the drug to a mortar, wash the glass plates with a few C.c. hot alcohol, and pour this on the drug which is then finely powdered and preserved in dry glass-stoppered jars. (1) For determining the free alkaloids, weigh accurately five grains of the prepared sample, transfer to a Soxhlet's extraction tube, and treat for six hours, or until exhaustion is complete, with chloroform. Evaporate the chloroform, add to the residue 30 C.c. of hot one per cent. hydrochloric acid, and filter to remove fat, rinsing out the flask with several small portions of hot water, passing these through the filter, and washing the filter three or four times with hot water. The united filtrate and washings now amount to about 70-75 C.c. Concentrate in a porcelain capsule on a water bath to about 10 or 15 C.c., transfer to a graduated cylinder, which has been carefully compared with the burette to be used for the Wagner's reagent, and rinse the capsule with three or four successive portions of hot water, making up the volume in the cylinder to 30 C.c. after cooling. Now run in from the burette 30 C.c. standard Wagner's reagent and agitate well. Filter through asbestos after five minutes, and pour the filtrate into the same burette, previously washed and dried. About 55 C.c. will be recovered. Run out an aliquot portion of the liquid (say 30 C.c.), and neutralise the excess of iodine with decinormal sodium thiosulphate solution, then from the result calculate the number of C.c. of iodine solution used. Multiply this number by 0 00485 for the weight of anhydrous caffeine. With another aliquot portion of the filtrate make a duplicate titration. (2) For determining the combined alkaloids, after exhaustion with chloroform, add alcohol of 90 per cent. to the drug, which is still contained in the extraction tube, and continue the treatment until exhaustion is complete, as shown by the absence of colour in the portion of menstruum last siphoned over in the apparatus. Two or three hours are usually sufficient. This alcoholic solution may be treated in either of the following ways:—(*a*) Evaporate the solution to dryness in a tared porcelain capsule, and weigh. Take a small portion (0·200 or 0 300 Gm.), and determine the amount of nitrogen by combustion. This nitrogen is entirely alkaloidal, as proteid substances are not extracted from the drug by the strong alcohol, and the total nitrogen can be calculated into caffeine. From the amount of caffeine found by combustion of the aliquot portion calculate the total amount present in the whole extract. (*b*) To the hot alcoholic solution add an excess of freshly precipitated lead hydroxide (litharge or lead carbonate will not answer), and digest on a water bath for a few minutes, until the supernatant fluid is colourless. Then transfer to a porcelain capsule, rinse the flask with hot alcohol, mix with clean white sand, evaporate the mixture to dryness, and place the whole in the extraction tube. Treat with chloroform three or four hours, and determine the caffeine volumetrically as previously directed.

Oil of Monarda Punctata.

W. R. Schuman and E. Kremer have examined a specially distilled specimen of the oil of *Monarda punctata*, S., which was of an amber or light yellow colour, with a pleasant and characteristic mint-like odour, and specific gravity 0 9307 at 20°. It turned the plane of polarisation 0° 5479 to the right at 20°. A crystallised phenol (m.p. 50°), present in the oil to the extent of 56 per cent., gave the characteristic reactions of thymol and carvacrol. The oil practically free from thymol had a specific gravity of 0·887, and turned the plane of polarisation 1°·7166 to the right in a 100 Mm. tube. On fractionation and separate examination of the different fractions obtained, the presence of cymene and linalool (?) in the oil was indicated. Another specimen of properly authenticated oil was also examined. This had a slightly reddish colour, sp. gr. 0 925 at 20°, and contained 61 22 per cent. of phenol.

SOME REPORTS PRESENTED AT MONTREAL.

Pharmacists in the United States.

The following is a summary of statistics recently compiled by the Section on Legislation and Registration of the American Pharmaceutical Association:—

Total Registered Pharmacists and Assistants in U. S., Close of Last Official Year.

		Assistants.
Compiled from reports	51,812	7,787
Estimated, additional	4,000	800
	55,812	8,587
Total registered pharmacists and assistants		64,399

Pharmacists Registered During Last Official Year.

By examination	1,682
On pharmacy diploma	333
On medical diploma	337
On licences of other boards	82
On experience	569
	3,003
Estimated, additional	300
	3,303

Assistants Registered Last Year.

By examination	931
On experience	108
	1,039
Estimated, additional	200
	1,239

Comparison with Last Year.

By the report of the Secretary of this section at the last meeting there were registered the year preceding:—

Registered pharmacists	3,521
Report for this year	3,836

Showing a gain in the number of registered pharmacists registered the past year of 315.

The number of assistants reported last year was..	860
Reported as registered the past year	1,039

Showing an increase in registration for the year of 179.

The great disparity between the number registered each year as assistants and as pharmacists is referred to, the former not amounting to much more than 25 per cent. of the latter. This is partly accounted for by the fact that many States do not recognise the assistant's grade. But where it is recognised, it is thought to be a mistake to permit so many to register for the higher grade at once. "Would it not be better if every licentiate was required to first register as an assistant before being admitted to the examination for pharmacist's licence? Is there not at the present time too great an effort on the part of the young men to become registered pharmacists in the shortest possible time, and would it not be better for all parties, the public included, if they were encouraged to serve a little longer in their apprenticeship?" There can be but one and the same answer to these questions on the part of all interested in the progress of pharmacy, and our American cousins are to be complimented for their action in this matter, whilst we wish them more power to their elbows.

Organisation in Pharmacy.

Mr. G. Seabury, in his address to the Section on Commercial Interests of the American Pharmaceutical Association, referred to the answers he had received to the queries published in the *Pharmaceutical Journal* for Aug. 8 (p. 125). Several of the answers, he said, were serio-comic in character, and generally they were to the effect that the practice of pharmacy is drifting "to the far west plain of small, petty trade and commercialism." In speaking of the value of an annual registration fee, he said if all put their shoulders to the wheel it would give them power, and would ensure solid organisation. It would also provide sufficient funds to prosecute in necessary cases, and would likewise have the advantage of forcing departmental stores into their legitimate business, and increasing the local business among pharmacists in cities, which must ultimately lead to restoration of prices. Moreover, it would compel wholesale druggists to be more loyal to their natural customers. Pharmacists would honour themselves and their profession by paying into the treasury of their association a small registration fee, a sum which would ensure substantial results. Mr. Seabury then proceeded to recommend the appointment of a committee on professional relations. "The importance of this," he said, "cannot be under-estimated, since it brings the profession of medicine and pharmacy together, where a conference can be held for mutual benefit. Our trade interests, all must confess, are still in a lamentable condition, especially in the cut-rates centres. We have only ourselves to thank, since we still remain silent on the subject of fraternal interests and organisation. We must unite completely and organise, if only to maintain and strengthen our pharmacy laws. If we fail everywhere else, let us defend our acts, else pharmacy will drift into the channel of trade and commerce. May we soon realise the dangers, and act at last like brethren in the conservation of our professional and commercial interests."

Pharmaceutical Research in America.

The Sub-Committee on Research—consisting of Edward Kremers, J. N. Lloyd, L. E. Sayre, A. B. Prescott (Chairman), with Dr. Rice and Professor Sadtler as *ex-officio* members—appointed last year by the American Pharmaceutical Association, has, so far, taken in hand the following subjects:—(1) Taraxacin, by Prof. Sayre. (2) The Menthol Group, Report IV., by Edward Kremers. (3) *Monarda fistulosa*, by Edward Kremers. (4) *Monarda punctata*, by Edward Kremers. (5) Cascara sagrada—its Chemistry and Pharmacognosy, undertaken by Dr. A. R L. Dohme and others, with a pharmaceutical history by Prof. Lloyd. (6) The Caffeine Compound in Kola, already styled "Kolanin"—its chemistry and its relation to the caffeine-bearing compounds of the other beverage-plants, by A. B. Prescott and J. W. T. Knox. For future work. (7) The periodides of the alkaloids, as molecular forms for volumetric or gravimetric estimation, by A. B. Prescott and others, in certain fundamental investigations already published in the chemical journals in 1895-96, and collected in a pharmaceutical reprint, preparatory to work for assay methods, now being undertaken in behalf of the revision of the Pharmacopœia. (8) Valuation of wild cherry bark—going on to an investigation of amygdalin and related glucosides and their reactions in estimation, by A. B. Stevens. There have been before the Committee projects for the concentration of several workers upon the chemistry and pharmacognosy of each of several important drugs, and it is designed to give preference to indigenous drugs, also to drugs which, though not indigenous, are largely produced in the United States.

INDIA-RUBBER IN MEXICO.

Sir Henry Dering, in his report on the productions of Mexico, says the rubber tree is indigenous to Mexico and is found growing wild along both coasts, below 22 degrees north latitude, from sea level to altitudes running from 1200 to 1500 feet, and principally by the river meadows. Rubber is essentially a tropical tree, hence it requires a hot and moist climate. The temperature best adapted for its vigorous growth is above 86° Fahrenheit, and the rainfall should be at least 60 to 70 inches per annum. There are eight kinds of rubber trees that grow wild in the country, but the kind known under the name of "Castilloa elastica" is the most important and the best, as it is very much sought for, for its sap and for propagation. Regarding the work of extracting the rubber one man will tap from twenty to twenty-five trees a day if the operation is performed carefully and methodically. In most places the tapping is done in May and sometimes again in October, but it is not advisable to repeat the operation as often as that. The process generally consists in making two or three incisions in the lower part of the tree and collecting the sap that flows from them on clay vessels placed next to the trunk. The process can be repeated every year for twenty-five years or more, especially if the wound is covered with wax or clay after the flow of the sap has ceased. When there is a large quantity of milk gathered it is placed in a barrel having a faucet and a solution of five ounces of chloride or sub-carbonate of sodium in sufficient water to cover the whole mass, which is agitated with a stick every now and then. After the lapse of twenty-four to thirty-six hours the water is allowed to run out through the faucet, this operation of washing is carried on until the rubber becomes white. About 44 per cent. of rubber remains from the original amount of milk after the water and other matters have been eliminated by evaporation. Trees planted on lands having the soil, climate, and elevation adapted for the culture will produce from five to six pounds of juice on the first year that they are tapped, which amount is equivalent to 2·4 pounds of pure rubber. This product will be gradually increased every year for the next four or five years, and sell for fifty cents per pound on the plantation. The total expense for a rubber plantation of 100,000 trees will not exceed 25,000 dollars, and as the yield of 100,000 trees will be about 240,000 pounds at the first year's harvest, this will bring the planter 120,000 dollars, besides the product obtained from the side planting. The net profit on the investment, after deducting the entire cost of the land and all expenses up to the first year of harvesting, will be 95,000 dollars, and each of the succeeding harvests for twenty-five or thirty years will bring a steady income of over 100,000 dollars.—*Journal of the Society of Arts.*

PHARMACEUTICAL JOURNAL.

A Weekly Record of Pharmacy and Allied Sciences.

ESTABLISHED 1841.

Circulating in the United Kingdom, France, Germany, Austria, Italy, Russia, Switzerland, Canada, the United States, South America, India, Australasia, South Africa, etc.

Editorial Office: 17, BLOOMSBURY SQUARE, W.C.
Publishing and Advertising Office: 5, SERLE STREET, W.C.

LONDON: SATURDAY, SEPTEMBER 5, 1896.

THE RELATIONS BETWEEN PHARMACISTS AND MEDICAL PRACTITIONERS.

MUCH as we are disposed to sympathise with the tendency of medical men to establish an efficient defensive system by which irregular practice of medicine and surgery would be prevented, we cannot avoid some feeling of regret that in connection with this matter the old grievance of counter prescribing by chemists should have been made the subject of discussion at the late meeting of the British Medical Association in Carlisle. In many respects the arguments brought forward by Mr. BATEMAN in the paper read by him, would be very generally agreed to by chemists no less than by medical men; the desirability of drawing a sharp line of demarcation between the medical application of remedies for the treatment of disease and the pharmaceutical preparation of medicine for that purpose would be as readily acknowledged by chemists as by medical men. But when it is remembered that, under existing conditions, there is not, in this country, any absolute restriction of the practice of medicine or of pharmacy to persons having certified competence for those occupations, the practical difficulty of preventing undesirable exercise of either function becomes evident In that respect chemists and druggists have as much reason for dissatisfaction as medical men. Except in regard to the sale and dispensing of articles defined as poisons in the schedule to the Pharmacy Act, legal qualification does not protect the educated chemist from the competition of persons who have not that legal qualification or, indeed, any fitness for pharmaceutical work. In the matter of use of title the chemist is even worse off than the medical man. In the public interest both might advantageously have greater privileges conferred by their legal qualifications, and a useful limitation of their respective functions might be brought about by the same means.

But without entering into the question whether prevailing "free trade" opinions leave any prospect of such a regulation of the practice of pharmacy, or of medicine being established in this country, it is sufficient for our present purpose to confine attention to those circumstances which show that a mutually satisfactory limitation of the functions appertaining to pharmacy and medicine must be the result of agreement and concession on both sides rather than of legal procedure. In the first place it is important to note that the Medical Act does not make the practice of medicine or surgery a monopoly for those entitled to use a name or title implying that they are legally recognised medical practitioners: it merely reserves to them the right to use such names and titles as means of enabling the public to distinguish them from persons who are not so recognised. The actual practice of medicine or of surgery has no further restriction than this one of the use of title, hence the utmost that can be done under the Act to prevent irregular practice is by proving actual false pretence or the use of a description implying legal qualification. Unless infringing the provisions of the Medical Act in those respects, any person may "profess to judge of internal disease by its symptoms and apply himself to cure that disease by medicine." The same holds good with regard to surgical practice, and how difficult it is to establish infringement of the law will be seen from a case reported at page 213.

Even the Apothecaries Act, which is most relied upon as a means of preventing irregular practice of medicine or surgery, leaves much uncertainty as to the precise meaning of "practising as an apothecary." There is no doubt that prior to 1815, apothecaries were as much offenders, in regard to unqualified medical practice, as chemists and druggists were; by the continuance of the practice since that time, chemists and druggists have followed the precedent established by the apothecaries before they became recognised medical practitioners, and the apothecaries' attempt to prevent chemists and druggists from continuing the usage was signally frustrated. That may have been a misfortune: a different result distinctly defining the province of pharmacy and that of medicine would, perhaps, by this time have been found a benefit on both sides; but as matters stand, it is either the actual state of the law or the expediency of mutual concession which must be considered. In both respects we think that medical men are disposed to view the case from a too one-sided point. Opposition to counter practice, as it now exists, comes mainly from the general practitioners, who may be regarded as the direct descendants of the apothecaries, as they were before 1815, it is in virtue of the position held at that time, that they claim the right to dispensing, whereas a more equitable consideration of the circumstances attending the change then made would have led to the discontinuance of the pharmaceutical work of dispensing when medical practice was taken up on regular lines. The recognition of the apothecary as a regular medical practitioner in 1815 should in fact have been accompanied by a similar proceeding in regard to the practice of pharmacy by chemists and druggists taking the place formerly occupied by apothecaries.

The opinion entertained in some quarters as to the "undoubted legal rights" of medical men "under the Apothecaries Act" appears to be very much stronger than temperate consideration would warrant, it is also without much support from the results obtained by litigation. The decision in the Lotinga case, that "an apothecary is a person who professes to judge of internal disease," etc., is quoted by Mr. BATEMAN apparently to explain "practice as an apothecary"; but if correct as a description, it is not distinctive as a definition, for the statement would have been as applicable before the Apothecaries became recognised as regular medical practitioners as it has been since that development.

ANNOTATIONS.

MEMBERS OF THE A.P.A. were presented at Montreal with an attractive souvenir, in the form of an illustrated guide to the city, prefaced with the couplet:—

"From whatsoever state ye come
Welcome, thrice welcome, all."

The illustrations in the book are remarkable examples of modern process work, being reproduced in a manner not excelled by the best English and American illustrated magazines. But the letter-press possesses even greater interest, a most readable account being given of the history of a typical Canadian city, and the commercial metropolis of the Dominion. Montreal still reveals in its streets and inhabitants many characteristics of both French and English occupation, whilst "here the old world mingles with the new, and the rapid advance of civilisation only serves to make the contrast more apparent."

CHEMICAL TRAINING is a subject to which public attention is being directed in France as well as in England, and steps are being taken to organise special courses in advanced and technical chemistry at Paris. A healthy sign in connection with this chemical renaissance is the fact that the leading French chemical manufacturers are co-operating with the professors to bring about a more satisfactory state of affairs than exists at present. Moreover, in addition to training students, it is proposed to assist them to find suitable appointments when they are competent to undertake their professional duties. The organisation proposed bears some resemblance to our Institute of Chemistry, which is likely to do much towards maintaining the qualifications of professional chemists at a proper standard.

MEDICINE-STAMP DUTY realised £238,946 during the year ending March 31, this being the highest sum realised since 1891-92, when the huge total of £240,062 was attained, and created a record. During the past five years the amounts paid for medicine stamps have been as shown:—

Year.	Amount.	Increase.	Decrease.
1891-2	£240,062	14,361	—
1892-3	£220,325	—	19,737
1893-4	£213,210	—	7,115
1894-5	£234,881	21,671	—
1895-6	£238,946	4,065	—

The number of licences issued during 1895-96 was 31,592, so that less than half of the holders of licences are registered chemists and druggists.

LECTURES IN BACTERIOLOGY AND HYGIENE are to be delivered at the British Institute of Preventive Medicine, 101, Great Russell Street, W.C., during the coming winter, the first session commencing on October 1, whilst the laboratories of the institution will also be open daily from 10 a.m. to 5 p.m. for the purpose of instruction and original work. There will be courses in bacteriology in relation to medicine, pathology and hygiene, in biological chemistry, the bacteriology of fermentation, photo-micrography, etc. The work will be under the supervision of Allan Macfadyen, M.D., B.Sc., to whom application should be made for further particulars, and he will be assisted in the Bacteriological Department by R. T. Hewlett, M.D., M.R.C.P., and in the Chemical Department by A. G. R. Foulerton, F.R.C.S., D.P.H. Camb.

PHYSIOLOGY OF COLOURED LEAVES.—Dr. E. Stahl has investigated the function of the colouring matter of coloured leaves, which he calls erythrophyll in preference to anthocyan (*Annales Jard. Bot. Buitenzorg*, 1896, p. 137). In the first place he regards it as certain that the colour is no protection against the attacks of insects or snails, although many rodents and ruminants exhibit a preference for green leaves. The main purpose of the colouring matter is in connection with the process of transpiration. The absorption of the rays of light by erythrophyll is complementary to that by chlorophyll; the absorption of red rays is advantageous to the plant by raising its temperature; and this elevation of temperature Dr. Stahl was able to determine by experiment. The red pigment is, therefore, concerned in promoting the process of metastasis. Its frequent occurrence in the stigmas of entomophilous plants, as in the hazel, probably assists the formation and growth of the pollen-tubes. Erythrophyll is never present in the guard-cells of the stomates, where a low temperature is favourable in order to increase the turgæ of the cells and hence promote the opening of the stomate.

COLOUR SCREEN MAKING.—Colour screens are now indispensable in advanced photographic work, and F. E. Ives, of Philadelphia (*Photographic Journal*, xx., 315), recently gave a useful practical demonstration of the making and testing of such screens before the Royal Photographic Society. The best method, he thinks, is to coat patent plate-glass with gelatin and, when the film is dry, immerse the plate in an aqueous solution of the dye-stuff until a sufficient quantity is absorbed, then dry again and cement to another piece of patent plate-glass by means of Canada balsam, so as to protect the film from dust and injury. Unless special facilities are available, however, it is easier to prepare the screens with collodion films. The patent plate-glass selected should have plane surfaces as near parallel as possible. This may be "flowed" with plain collodion, then with an alcoholic solution of the dye-stuff, drained on blotting-paper and allowed to dry spontaneously. Or better, the dye-stuff (such as brilliant yellow or "uranine") may be dissolved in the collodion before coating the glass. To make eight ounces of the coloured collodion, take four ounces of a clear alcohol solution of the dye-stuff and forty grains of "cotton." Shake together until the "cotton" is thoroughly soaked, then add an equal quantity of ether. Coat two pieces of glass with this collodion and, when dry, cement them face to face with Canada balsam with the thick edge of one film opposite the thin edge of the other. The effect of this precaution is to keep the depth of colour in the screen more uniform. The application over the films, before cementing them together, of a thick varnish made by dissolving mastic in benzol is useful in preventing punctures by dust or grit. After the excess of balsam has drained out and been cleaned off the edges with paper dipped in methylated spirit, the edges should be bound with strips of gummed paper, as in the case of lantern slides.

COLOURING MATTERS OF PLANTS.—According to L. Weigert (*Bot. Centralblatt*, vol. lxvi., 1896, p. 353) there are two well-marked classes of red pigment in the vegetable kingdom, the wine-red, which occurs in *Ampelopsis*, *Rhastyphina*, *Comus sanguinea*, etc.; and the carrot-red, in the beet, *Amaranthus*, fruit of *Phytolacca*, etc. The mallow-violets, as in *Coleus*, etc., form another group. In black grapes and in whortleberries there are two pigments, one of which is a glucoside; the colouring matter of yellow vine leaves is a glucoside, as is also that of the mallow. The pigments of the grape and whortleberry appear to belong to the class of tannins.

Excessive Indulgence in Drugs, like chloral, was alleged by Mr. W. F. Eckroyd, presiding at the Colne (Lancs.) Licensing Sessions, to be the cause of an increasing amount of debauchery and ruin. That such drugs are much more injurious than ordinary intoxicating liquors, if taken to excess, may be correct, but it would be interesting to see the statistics upon which this magistrate bases his remarks, as also to know in what districts drugs are used "in place of spirits with deplorable effects." If the evil exists and continues to grow, it may undoubtedly require "to be legislated upon," and we cordially endorse the suggestion that chemists ought to use the greatest possible care in the sale of drugs to the public. Some think, however, that this is done now in most cases.

Royal College of Physicians.—Subjective Sensations of Sound is the subject of the Bradshaw Lecture to be delivered by Dr. W. R. Gowers, F.R.S., on November 5, forming in some sense a continuation of his Bowman Lecture before the Ophthalmological Society a few years ago. Dr. Bastian has been appointed Lumleian Lecturer for next year, Dr. Luff, the Gulstonian Lecturer, and Dr. Sidney Martin will be the Croonian Lecturer for 1898.

Royal Photographic Society.—The forty-first annual exhibition of this Society is now in course of preparation, and will open to the public on Monday, September 28. On the Saturday previous there will be a private view, followed in the evening by a conversazione, at which the President, Captain W. de W. Abney, C.B., D.C.L., F.R.S., and Council will receive the Fellows, members, and their friends. The exhibition will be open daily from 10 to 5, and on Monday, Wednesday, and Saturday evenings (when lantern slides will be shown) from 7 to 10, and will close on November 12. The judges on this occasion are: In the Art Section—F. P. Cembrano, Junr., Col. J. Gale, B. W. Leader, A.R.A., G. A. Storey, A.R.A., W. L. Wyllie, A.R.A.; and in the Technical Section—Capt. W. de W. Abney, Chapman Jones, F.I.C., F.C.S., and Andrew Pringle, F.R.M.S.

Ten Thousand American Prescriptions.—The Pharmaceutical Association of Illinois gives the following interesting statistics with regard to the popularity of various medicines. In 10,000 prescriptions quinine was used in 800 cases, bismuth in 465, tincture of opium in 464, morphine in 400, sodium bicarbonate in 350, calomel in 350, tolu balsam in 345, sal ammoniac in 325, *and patent medicines in* 2613 *cases.*

Coroners, Doctors, and Poison Law.—The utility of the newspaper press as a means of instructing the public is sometimes sadly interfered with by want of knowledge on the part of writers. A case of the kind occurred last week in connection with an inquest held at Wandsworth on a man who had been poisoned by an overdose of chlorodyne. In a paragraph setting forth the dangerous nature of chlorodyne, the statement was made that it can be "procured by anyone who chooses to tender the price of it at a chemist's shop or general stores," and reference was made to the fatal result of its misuse in the Wandsworth case as showing that chlorodyne is taken by many persons in ignorance of its real nature. If there were any ground for these statements there would be reason to complain either of the inadequacy of the law relating to the sale of poisons or of its provisions being neglected; but we doubt whether either condition exists. The *Daily Telegraph* has more likely been misled by the doctor's remark that he "thought chlorodyne a sufficiently dangerous preparation to be included among the scheduled poisons," and by the Coroner's condemnation of "the present laxity of the law." Evidently Wandsworth and the *Daily Telegraph* are in need of enlightenment on these subjects.

GERMAN APOTHEKER VEREIN.

TWENTY-FIFTH ANNUAL GENERAL MEETING AT DRESDEN.

The Twenty-fifth General Meeting of the German Apotheker Verein, which was opened by the President, Herr Frölich (Berlin), on Tuesday, August 18, offered to those who took part in it an agreeable variety of attraction. After the usual speeches had been delivered, and the guests duly welcomed, Herr Müller, Chairman of the Local Committee, opened the pharmaceutical exhibition held in connection with the meeting. The meeting then at once adjourned and proceeded to inspect the exhibition, a short account of which will be found on page 210. This concluded the serious business of the day, the remainder being devoted to those forms of social enjoyment which are so characteristic a feature of the German meetings. Unfortunately the weather was so unfavourable that the projected visit to the Zoological Gardens resolved itself into a gathering in the large hall in the gardens, in which a concert was given, and an amusing farce played on a small theatrical stage. In the hall numberless small and large tables were set out, at which the 600 or 700 present, amongst whom were a large number of ladies, seated themselves. As the evening progressed coffee and cakes were observed to give place to beer, wine, and substantial meals, and a corresponding change took place in the general tone of the meeting, which became so convivial that the latter part of the concert could scarcely be heard. Towards midnight the guests began to disperse. On Wednesday the meeting opened with the discussion of resolutions proposed either by the Committee or by delegates on matters of little interest to foreign pharmacists; the evening was occupied by a visit to the opera or by a free and easy gathering in the Vienna Garden. Such amusements, however, did not usually terminate the evening, for apparently by common consent a restaurant had been selected, in which the leading spirits of the Verein, from the President downwards, as well as most of the foreign visitors, might be found discussing half-litres of lager up to the small hours of the morning.

On Thursday the special business of the Verein was continued, and practically concluded. During a discussion on a proposed re-organisation of the 'Archiv der Pharmacie,' the 'Apotheker Zeitung,' and the 'Repertorium,' the reproach was made that the 'Archiv' was of little use to the practical pharmacist, to which the President replied that the scientific education of pharmaceutical assistants was now so indifferent that they were unable to understand it—an assertion that met with general approval. Later on a resolution was carried to the effect that a committee be appointed to prepare a homœopathic pharmacopœia, the majority of members present being of opinion that this would tend to bring the dispensing of homœopathic prescriptions into the hands of the pharmacists.

After the termination of the proceedings, a dinner was given, at which probably between six hundred and seven hundred were present. The hall was not well adapted for hearing, and after the first two or three toasts, little or nothing could be heard of the speeches. One speaker, who unfortunately was below the medium height, was greeted with shouts of "Put him on the table," and although he was promptly put there, nothing could be heard of his speech. After the dinner the tables were cleared from the centre of the hall, and a dance terminated the official programme for the day. The unofficial part of the programme was carried out in the usual restaurant, and prolonged, if anything, further into the night than usual.

The following day was occupied with receiving visitors from the Austrian Apotheker Verein and visiting the Saxon Industrial Exhibition, which, however, contained little of pharmaceutical interest.

The meeting terminated with an excursion on Saturday into Saxon Switzerland. The party was carried on two gaily-decked steamers to Wehlen, and walked thence to the Bastei, where dinner was served. Here, too, the speeches were inaudible, but all present joined lustily in the songs, the words of which had been distributed. From the Bastei the party walked to Rathen, whence the steamers carried them back to Dresden. In spite of the unfavourable weather the company was in high spirits, and brought the twenty-fifth general meeting to a pleasant termination.

PHARMACEUTICAL EXHIBITION IN DRESDEN.

In connection with the Twenty-fifth General Meeting of the German Apotheker Verein in Dresden, an exhibition of apparatus, preparations, and other objects of pharmaceutical interest was held there from August 18 to 22. Although the rooms which were at the disposal of the Exhibition-Committee were neither large nor well suited to the purpose, and in spite of the competition offered by the Second International Exhibition at Prague, the exhibits at Dresden contained much of interest to pharmacists. A cursory glance showed at once that all of them were in a greater or less degree really pharmaceutical. To describe each one of the exhibits would be only wearisome, if indeed it were possible, and it will be better therefore to notice only such objects as attracted particular attention.

In the first room Kopp (Strasburg) exhibited an enamelled iron cylindrical filter for the automatic preparation and filtration of simple syrup in the cold. The sample shown was, however, scarcely as colourless as might be desired. Focke (Dresden) exhibited a compact apparatus for distilling and evaporating for steam heat. In the next room the bandages and machine of Stephan (Dresden) attracted attention, the machine being capable of producing bandages up to 120 centimetres in width and 50 metres in length. The same firm also exhibited their well-known gelatine autrophores as well as their herbaria and collections of drugs for the use of students. Both of the latter were especially noticeable for the excellence of the specimens, and the former in addition for the remarkable manner in which the colours had been retained. Liebau (Chemnitz) showed apparatus for pharmaceutical use, amongst which may be noticed a suppository mould for making suppositories of any size in the cold by simple pressure with wooden plugs, and a cylindrical mill for the preparation of ointments; the ointment is fed into the cylinder, pressed by weights into a blunt cone leading to the grinding surface and scraped off as it issues from the mill. The tablet machine showed by this firm, which works by a long lever, appeared less satisfactory than the small one recently shown by Dr. Symes at the British Pharmaceutical Conference, whilst the plaster press for producing plasters in sticks, instead of thick rolls by pressure whilst kept warm, would scarcely be required by the retail pharmacist.

In the third room the largest exhibit was that of Gehe and Co. (Dresden), which consisted of a collection of American and East Indian drugs, specimens of opium, samples of the firm's products, and a number of old original packages, which, however, possessed only an historical interest. Max Arnold (Chemnitz) showed an antiseptic silvered gauze bandage, and preparations showing the remarkable antiseptic effect exerted by metallic silver; it is claimed for these bandages that they are antiseptic, inodorous, and non-poisonous. In the same room Schwarzenau (Berlin) showed a steam apparatus for pharmaceutical use, consisting of a combined boiler and still after the fashion of an ordinary water bath, but working under pressure. The same firm exhibited also a small vacuum apparatus for pharmaceutical use; the pan, holding about a gallon, is constructed of tinned copper; the hood is a separate glass dome, making an air-tight joint by means of a rubber ring. Exhaustion is effected by a water-jet vacuum pump, and the apparatus appeared an excellent one for pharmaceutical use on the small scale. The condenser is constructed either to collect the distillate or run it to waste. Steam apparatus for pharmaceutical laboratories was also exhibited by Stering (Jena), and tablet machines, ointment mills, and presses of various forms were shown by Hennig and Martin (Leipzig) and Zemsch (Wiesbaden). In room D, Dieterich (Helfenberg) exhibited suppositories and plasters of various kinds. Christ (Berlin) showed a compact and practical evaporating and distilling apparatus for pharmaceutical use. The boiler and evaporating pan are combined in water bath form, working at a pressure of half an atmosphere; the heating is effected with coke or coal on the principle of the slow combustion stove. From the boiler a steam-pipe leads to a small still, which is provided with a hood separable into two parts, and so constructed that it may be used for direct distillation or for blowing steam through any drug; these parts are bolted on by hinged screws. When disconnected the pan can be tipped to empty the contents. The condenser is closed and tested to stand pressure so that the hot water can be used to feed the boiler whilst in work or run to waste. By means of a branch pipe the steam can easily be used for all purposes not requiring a higher pressure than half an atmosphere. The apparatus requires no mounting beyond a pipe to a flue, and for water and waste, and occupies a space of about 3 feet by 4 feet 6 inches. In the last room Keyl (Dresden) exhibited a number of balances, weights, lozenge cutters, etc., and an adjustable powder-measurer in the form of a long narrow spoon, from which excess of powder was removed by a slip of steel passing over the bowl; powders with a tendency to agglomerate appeared, however, scarcely susceptible of accurate measurement by this little apparatus; Schmidt and Haensch (Berlin), showed polarimeters; and Hugershoff (Leipzig), various pharmaceutical apparatus.

In addition, of course, to the objects that have been noticed, the exhibition included a large number of rarer chemicals, new synthetical products, capsules, pills, lozenges, tablets, wines, extracts, and so on, that usually form a large part of pharmaceutical exhibitions. In this case it must be admitted that such preparations were not obtrusively prominent, and the exhibition committee as well as the exhibitors may be congratulated on the success that attended their efforts under very adverse circumstances.

THE CHEMISTS' EXHIBITION.

DESCRIPTION OF EXHIBITS.

This exhibition, which was held last week in the National Skating Palace, Argyll Street, W., closed on the 28th ult. The last day was more particularly set apart for the medical and nursing professions, and a goodly number availed themselves of the opportunities afforded of inspecting novelties of interest. The proprietors of the *British and Colonial Druggist*, who are responsible for the organisation and management of the exhibition, have reason to feel gratified with the success of their undertaking, as the attendance, which has included representative pharmacists from near and far, has exceeded all expectations previously formed. In last week's Journal an account was given of some of the exhibits. Details of several others will be found below:—

Armour and Co., 59, Tooley Street, S.E., had a good exhibit of their food and digestive specialties. Amongst these prominence was given to a beef juice prepared by cold expression, which is rich in albuminoids, and contains about 35 per cent. of solids, but all their other beef products, including the extract and "Vigoral," were also shown. We noticed that this firm is now giving special attention to the manufacture of animal products, for which their position as large "killers" fits them to an eminent degree. As yet, this department is but in its infancy, but it is increasing rapidly. On this occasion specimens were shown of desiccated thyroids and other glands, as well as tablets of the same. The thyroid elixir is recommended as a standard preparation, one fluid ounce of it containing the active constituents of one average gland. **Barclay and Sons, Limited**, 95, Farringdon Street, E.C., had a miscellaneous exhibit thoroughly representative of this old-established firm. Amongst the things shown was a good display of photographic cameras and sundries, to the sale of which considerable attention has been devoted during the last few years. A good show was made of cut-glass bottles and perfumes, included amongst the latter being Artaud's French essences, the get-up of which is very attractive. The druggists' sundries included the "Baby Bunting" and "Daisy" feeders, both exceptionally good lines to retail at sixpence and a shilling. In addition, a display was made of Havana and British cigars and Turkish cigarettes, as well as packed teas suitable for a chemist's trade.

Mr. F. W. Bates, Brooks Bar, Manchester, had a stand filled with his well-known preparations "Sulphur salt" and "Frizetta," whilst **Messrs. T. F. Bristow and Co.**, St. James' Walk, Clerkwell, had a very tasteful display of perfumery and toilet soaps. Amongst these prominence was given to the "Violette de Parme" series, of which it can be said that we have come across none amongst the many makes of this essence which excel it in quality and style of production. A description of the **British American Ball Nozzle Company's** specialties has appeared previously in these columns. It is needless, therefore to dwell on the principle of construction which makes the enema adjuncts peculiarly adapted for the work. The nozzle tubes may be had separately and can be fitted to any enema syringe. The **British Malt Products Company**, 98, Bermondsey Street, S.E., whose works are at Haddington and Dunbar, showed a large assortment of malt preparations, including the extract alone and in combination with cod-liver oil, cascara sagrada, peptone, and creosote. Attention was also devoted to a specially prepared malt flour intended for infants' foods, and a malted food which is claimed to form a preparation absolutely predigested and free from starch.

Messrs. A. S. Cartwright and Co., 75, Ford Street, Hockley, Birmingham, showed a number of novelties in the shape of infants' soothers, some of which were exceedingly ingenious in construction, whilst in addition a display of the patent "Holdfast" union was made. **The Condal Water Company, Limited,** 7, Lambeth Hill, E.C., had a display of their well-known aperient water, which, as most chemists know, is only supplied to firms who have signed the agreement provided by the P.A.T.A. **Messrs. Cosenza and Co.**, Wigmore Street, W., exhibited Maggis' "Consommé," which seems to be getting as popular in this country as it is abroad, where the sale is very large. The preparation is nicely put up, and is largely used and appreciated by travellers, to whom compactness is an absolute *desideratum*.

Reference was made last week to the arrangements made by the **Chemists' Aerated and Mineral Waters Association** for the reception of customers and friends. We notice that the directors and heads of the departments mustered in force, those present during the week being Mr. Horace Davenport (Chairman) and Messrs. Gould (London), Kemp (Manchester), and Councillor Wilson, J.P. (Harrogate). Messrs. Pirie (London manager), Groome (Bristol manager), and Butler (Secretary) were also in attendance. **Messrs. Cresswell Brothers and Schmitz** had an excellent position on the ground floor, where a fine array of sponges was shown, the value of which must have run into a very large amount. On this occasion some prominence was given to the Yucatan sponge, a cheap variety somewhat resembling the Cuban, but of better quality.

J. Defries and Sons, Limited, Houndsditch, had an assortment of the well-known Pasteur-Chamberland filters in all sizes and varieties. In addition, photographs of the enormous filtration system which has recently been supplied for the municipal water works in Darjeeling was shown, as well as André's automatic filter cleaner. The same firm exhibited the aseptic irrigator, for use in operation rooms, designed by Mr. Edmund White, B.Sc., of St. Thomas's Hospital.

The "Excel" Sterilised Milk was shown by the Company bearing this name. This dietetic preparation is claimed to be pure English milk sterilised and bottled in vacuo by a patented processs. It is very favourably spoken of by the medical press. **Messrs. Ford, Shapland and Co.**, High Holborn, W.C., made an effective display of chemists' hand-bills and calendars for 1897, whilst **Messrs. Wm. Glendenning and Sons**, Newcastle-upon-Tyne, show their well-known coca and meat and malt wines. **Ingram and Royle** had their usual exhibit comprising Carlsbad and Vichy waters, salts, and pastilles, but the medicinal and dietetic waters for which this firm are agents are so well-known to our readers that it is difficult to say anything fresh about them. A good display was that of **Hockin, Wilson and Co.**, Tottenham Court Road, W., which embraced an extensive assortment of novelties. Amongst these was the "Eureka" suppository machine, which could be seen in use; the "Llama" series of toilet preparations; Hockin's series of pharmaceutical liquors; a new kind of clinical thermometer suitable for the use of unskilled persons; and several new ideas in the way of feeders and soothers.

Messrs. W. Kemp and Son, Horncastle, had a large display, part of which was devoted to an assortment of crude drugs, whilst a large series of galenicals was also in evidence. The firm has long made a specialty of linseed, all crushed varieties of which it is able to do on favourable terms. Various kinds of beeswax, including French, Tuscan, and Chilian, were shown. The section devoted to chemists' counter specialties was conspicuous on account of the general elegance of the get-up, and it may be noted that a considerable amount of attention is now devoted to business in excisable and non-excisable wines. Amongst the former, the "Haylos" series, including port, burgundy, beef and malt, cinchona, and sherry bitters, will commend themselves for their quality and the advantageous terms on which they are supplied to the trade. **Messrs. T. Kerfoot and Co's** stand was conspicuous with a good show of granular preparations, in the manufacture of which they were amongst the pioneers. They also showed the "Sweet lips" bouquet lozenges and tooth paste. **Leslie's, Limd.**, Walbrook E.C., had their usual representative collection of plasters and bandages. Amongst the dressings we noticed an absorbent fibrine material made from the inner fibre of the Rhea plant, whilst there were several novelties in the shape of rubber, belladonna, and cocaine plasters. **Mansell, Hunt, Catty, and Co., Limited,** Hampstead, N.W., gave prominence to Hunt's pleated bottle caps, sanitary spitcons, toilet papers, embossed and gummed seal labels, Digne's enzymes (or cachets) and various kinds of folding boxes. **Messrs. Moise and Marshall**, 9, Butler Street, E.C., made a special show of the "Highland heather" perfume, and distributed a little *brochure* as an advertising medium of it. This firm has the London agency for Jules Vigo, and showed his concentrated essences and perfumes, as well as Hill's cajeput jelly.

Mr. Charles Midgley, 23, St. Ann's Square, Manchester, had a very neat display of medicated soaps, of which he makes a complete series, suitable for the use of skin specialists. His other toilet preparations are characterised by an evident appreciation of what is wanted, not always met with. The display of surgical dressings and bandages made by **Mr. John Milne**, Ladywell, S.E., was very creditable to the manufacturer. Amongst the articles mention should be made of packages of plaster of Paris bandages, which are not affected by keeping in the most humid atmosphere. The "first field" dressing, as supplied to the Government and Volunteer corps, is an admirable addition to a cyclist's outfit for the application of "first aid." Amongst the dressings made under Sir John Lister's directions, and shown at their stand, was a "Chinosol" combination, which has been favourably received by the profession. The "ambulance stock box," in three sizes, sufficient for 30, 100, and 500 cases, was also displayed. It may be said that the exhibit was the only one of its kind.

Messrs. Newball and Mason, Nottingham, had an extensive array of their temperance drinks, and suitable advertising matter of the same, whilst **Messrs. John Sanger and Sons**, Oxford Street, W., had amongst other things a very attractive show of perfumes, tastefully-packed manicure sets, and hypodermic syringes. **The Sharp Brothers Soap and Perfumery Company, Limited,** Red Lion Square, W.C., had the largest stand devoted to these particular articles in the exhibition. It was surmounted by a large block of soap in the shape of a pyramid with a ball on the top. This was composed of Bentley's Old Brown Windsor soap, and weighed about 2¼ cwt Prominence was also given to the "Pansalia" series, consisting of soap (of which a large pyramid was shown), perfume, dentifrice, etc. In addition, a fine show was made of fancy caskets of perfume and soap suitable for the Christmas trade, and a special line of perfumes put up in "mitre" stoppered bottles. The whole exhibit was characterised by the novelty and completeness which has made this firm a foremost competitor in the soap and perfume market.

Mr. H. Silverlock had specimens of 1897 almanacks and calendars on show, sufficiently varied in style and tasteful in the printing, whilst there was an extensive assortment of counter bills for chemists' use, and the various medical and pharmaceutical books, with the publication of which Mr. Silverlock is identified.

Messrs. A. de St. Dalmas and Co., of Leicester, made an excellent display of plasters. We were particularly struck with the tasteful style in which these goods were put up, as they have been greatly improved. The quality of the plasters has always been found reliable by medical men and chemists. Amongst the articles to which our attention was drawn particularly was an adhesive umbilical pad, the "Trilby" corn plaster, belladonna breast plasters, accouchement binders, and other goods of a like nature.

FOREIGN NEWS.

Salts of Sorrel in Paté de Foie Gras.—Pâté de foie gras has a somewhat evil reputation for sometimes and unexpectedly creating disturbances of the digestion, the cause of which has never been satisfactorily tracked. Gourmets have experienced after a repast that the much esteemed delicacy has, as our contemporary the *Revue de Thérapeutique* graphically puts it, "traitreusement bouleversé leurs entrailles." M. Peres attributes this, at any rate sometimes, to the presence of acid oxalate of potassium in the goose livers, which form the fundamental ingredient in the pâté. It appears that certain farmers mix a little powdered salts of sorrel in the food with which they "cram" the geese, and this "remedy" as they call it, causes a rapid enlargement of the liver in the unfortunate bird. In one instance a bird was poisoned by a overdose in this manner. The practice would not appear to be general, and to be kept strictly secret by those who employ it, since it enables them to obtain larger livers with less trouble, and in a shorter time than by the old system of feeding.

REVIEWS AND NOTICES OF BOOKS.

THE SCIENTIFIC FOUNDATIONS OF ANALYTICAL CHEMISTRY TREATED IN AN ELEMENTARY MANNER.. By WILHELM OSTWALD, PH.D. Translated with the Author's sanction by GEORGE M'GOWAN, PH.D. (Macmillan and Co.)

ANALYTICAL CHEMISTRY. By N. MENSCHUTKIN. Translated by JAMES LOCKE. (Macmillan and Co.)

Anything which will tend to remove chemical operations from the "rule of thumb" or subservience to "tables" should be heartily welcomed, and here we have two volumes which, in their several ways, should be of great service in that direction. Professor Ostwald's book deals with two questions. First, What are the physical conditions necessary to the recognition or the separation of different bodies? Secondly, By what chemical means are those conditions to be brought about, and what are the laws governing the changes which occur? It must be clearly understood that no mere scheme of testing or prescribed processes of separation is given which the student is to follow blindly, and with little or no thought, but the author endeavours to express clearly the mathematical and chemical principles which underlie all the processes involved.

The earlier part of the book is devoted to theory: it deals in succession with the recognition of different substances, the separation of substances, the physical and the chemical methods of separation, chemical equilibrium, etc. In connection with filtration the question of the washing of precipitates is carefully considered, and the important influence of surface condensation on solid bodies—or adsorption, a somewhat ungainly word which we fear has come to stay, since it has been used by Lord Kelvin, and appears also in Dr. Murray's new dictionary. The principles governing these processes are clearly stated, and are most important to be understood as a guide in chemical manipulation. But it is in the next chapter on chemical separation that we find the most important part of the book. The theory of solution, including the state of substances in solution, the doctrine of ions and the laws of chemical equilibrium, with those of mass-action and dissociation, are worthy of the most careful perusal. The long-standing and constant misuse of the "chemical equation" has done much harm, both by imposing an unnatural restriction on thought, and in an immense number of cases giving an altogether incorrect and misleading statement of fact. It professes to give an accurate account of a chemical reaction, whereas it is scarcely an exaggeration to say that if substances are made to act on one another in the proportions given in an equation, the course of chemical change is never expressed by the equation. In most cases a considerable excess of one substance is required to bring about the desired change. According to the usual conception of an equation, this "excess" is quite outside the sphere of change, and no account is taken of it. It is a body acting from without and no one knows how. And yet there are multitudes of cases where this excess is well known to be necessary and clearly active. The laws of dissociation and of two or more salts together in the same solution are considered, and also the important case of mixtures of acids with their own salts. As an instance of this last is taken the precipitation of zinc from a chloride solution by sulphuretted hydrogen, where it is usual to add an excess of sodium acetate. This not only substitutes acetic acid for hydrochloric, but the excess of acetate materially reduces the ionisation—the "strength"—of the acetic acid itself. Such an addition as this yields "a liquid which behaves almost as if it were neutral, although it has an acid reaction; and it retains this approximate neutrality even although a free strong acid continues to be liberated," as by the action of the sulphuretted hydrogen in the example just cited. "For this (strong) acid undergoes instant transformation, as shown above, and thus the concentration of the few hydrogen ions is only increased in relatively very slight degree."

The production of precipitates, the condition of supersaturation, and the redissolving of precipitates, are considered, all being governed by the same law, and with a section on electrolysis the theoretical part of the book closes. It will be seen that the domain of our old friend catalysis is considerably invaded in this programme, but a section is still reserved to it, and we suppose that it will continue to furnish to succeeding generations of chemists, as it has done in the past, a comfort which is akin to that afforded to the memorable old lady by the "blessed word Mesopotamia."

The second part of the volume is concerned with the application of theoretical principles in analytical practice. The author discusses the analytical properties of a number of different substances separately, He says: "My object in doing this will not be to attempt to teach analytical chemistry to beginners, for I am well aware that an appreciable time must elapse before the new views enunciated here can find general acceptance and exercise an influence upon the instruction of those who are commencing the study of the science. Students reading this book will read not so much with the object of actually learning from it analytical chemistry as of pondering over the scientific principles which underlie what they have already been taught by actual practice, so as to be able to apply this knowledge with greater freedom and certainty." We would very earnestly commend the last few words of this paragraph not only to students, but to all chemists, and especially those who have to do with technology, who should have as a chief aim of their work to understand clearly the principles of their science, so as to be able to "apply their knowledge with greater freedom and certainty." There are no short cuts in chemical science or chemical technology, and he who does not study underlying principles neither is, nor is likely to become, a chemist.

We have noticed a few mistakes or blemishes in the work which perhaps should be shared between the author and the translator, and indeed we must say that in many places the English of the translation is somewhat clumsy. Would the author who writes so precisely in the principal part of his work really be prepared to defend the following statement, which occurs on the first page?—"The number of properties appertaining to one particular substance is indefinitely great; it is therefore not possible to state at once definitely, with regard to two objects, that they agree in *all* their properties throughout. But as the result of an unexpressed induction of very wide applicability, we hold any such proof to be superfluous, for we know *that if two substances agree perfectly in some of their properties, they will agree in all.*" The italics are the author's. These propositions as they stand are contradictory, but there are many substances which agree perfectly "in some of their properties" and are yet perfectly distinct. It would surely have been possible to find a better phrase than "to measure the solubility of such *insoluble* compounds as chloride . . . of silver" (p. 23). There is a sentence on p. 39, at the meaning of which we can guess, but with no feeling of certainty, "in the case of solution of liquids in liquids it is necessary, in addition, that these shall not be miscible with one another." In the footnote on p. 82 the mathematical form has surely been carried too far. It speaks of the "*square* of the hydroxyl," by which is apparently meant $(OH)_2$, but the 2 here does not denote a square but "twice."

Prof. Menschutkin's book is also devoted to the identification and separation of chemical substances, but from a different standpoint. It has little to say about fundamental principles or the mathemati-

cal expression of chemical laws, and yet endeavours equally to supersede the "rule of thumb" and the mechanical use of tables. It may perhaps be described as a careful discussion of the mode of arranging a scheme of analysis or a "table." The chemical properties of bodies are considered, and the reasons for arranging them in groups, so that all the members of the same group have some common property—such as the solubility or insolubility of the sulphide—and then the differences existing between members of each group are taken seriatim until, by successive separations, each substance is detected or separated. The important difference between this volume and many other works on analysis is that the reasons for the scheme or table are carefully given, instead of the scheme being stated "with authority." All this is done with great care and, as far as we have seen, with skill and accuracy. The style of the book is perhaps somewhat diffuse and laboured, although the latter may be due to the translation rather than the author. It contains too long descriptions of matters which we should have thought were now universal common knowledge, as, for example, half a page of small type is devoted to an elaborate description of a Bunsen burner, the process of evaporation, a water-bath, and a "hood"; none of them apparently differing in any respect whatever from the usual type. Why porcelain or platinum dishes should be called here, and in many other places, "casseroles" is not apparent. Later we are told that to support platinum crucibles "iron triangles protected by pipe-clay have recently been used with advantage," but unless these are of some peculiar form, "recently" must have a special meaning. Again, small pieces of precipitate accidentally dropped are to be swept into the crucible by means of a feather *fan*, which seems to be a singularly inappropriate weapon. The determination of nitrates by means of mercury is attributed to Frankland and Armstrong, instead of, as clearly stated by them, to Walter Crum.

Nearly a page is devoted to a description of pulverisation, but no warning is given that if the composition of the substance is to be retained it is in most cases necessary to guard against loss of material, and that the whole of that taken should be pulverised. There is an ambiguity which might be read so as to direct that the coarser parts should be rejected. Under the head "Evaporation" it is said that "care must be taken that no dust falls into the solution, as the filtration and washing thus entailed would increase the volume of the liquid again!" Surely the more serious danger is the introduction of foreign matter. Some curious phrases occur here and there, such as "enable the separation," "exceptionally great instability," "more, less, or traces," instead of much, little, or traces. If a new edition is called for we hope that it will appear improved by very considerable condensation, both in matter and style, and with a little more care in the structure of the English.

Still, the defects in both books are comparatively unimportant, and we hope that many students in the widest sense of the term will give them a careful perusal, especially, perhaps, the first, but each for its own object.

Eucaine in the Anæsthesia of the Urinary Passages.—A recent experience of Görl shows that eucaine is not a suitable means of producing anæsthesia of the mucous membrane of the urinary system, whenever hæmorrhage is to be guarded against, since, unlike cocaine, it causes hyperæmia at the point of application. The author recently made use of a solution of eucaine to anæsthetise the bladder of a patient suffering from tumour of that organ. The introduction of the solution produced a slight smarting, and was followed by a somewhat abundant hæmaturia.—*Rev. de Thérap. Méd. Chirurg.*, lxiii., 502, after *Therap. Monats.*

LEGAL REPORT.

"OCULIST AND AURIST."

An Important Decision under the Medical Act.

On Tuesday the Leeds stipendiary magistrate (Mr. C. M. Atkinson) delivered judgment in a case which had excited considerable local interest, and which had some bearing upon the law as to medical practice.

The stipendiary said: In this matter two informations were laid against the defendant, Mr. W. Ison, of Leeds. In one, Mr. A. G. Bateman, who is described as General Secretary of the Medical Defence Union, a society which admittedly instituted the proceedings which have been taken in this case. The first information charged that the defendant did unlawfully, wilfully, and falsely use the name, title, addition or description "oculist and aurist," thereby implying that he was registered as a medical practitioner under the Medical Act, or that he was recognised by law as a practitioner in medicine. The other information charged that the defendant did unlawfully pretend to be a surgeon. The two informations were heard together, and the charge in each case rests on the provisions of Section 40 of the Medical Act of 1858. As the inquiry before me involved the consideration of questions which are not only uncovered by judicial decision, but also raise issues of considerable importance to the general public and to members of the medical profession, I think it right that I should express in some detail the grounds and reasons on which I have based the conclusions at which I have arrived in this matter. I may, however, say at once that so far as the first information is concerned—namely, the one by which it is sought to prohibit the defendant from describing himself as an oculist and aurist—I am of opinion that the charge against him cannot be supported. So far as the second information is concerned, I think that the course adopted by the defendant in advertising his pretensions has in some respects been such as to render him obnoxious to the penalties imposed by the Act of Parliament, and that if this course were persisted in by him without modification in these respects, he would in the future continue to expose himself to penal consequences. Now, at the outset, it is essential to observe that the Statute in question was enacted to enable persons requiring medical aid to distinguish between qualified and unqualified practitioners. It was not the object of the Legislature to create an absolute monopoly, or to attach to the mere practice of medicine or surgery without legal qualification the penal consequences to which I have referred. It is true that persons possessing registered qualifications, who choose to cause themselves to be placed on the register, occupy under the Act an exceptionally favourable position, so far as regards the recovery of fees, the holding of certain offices, and the granting of death certificates. But, with these exceptions, the scope of the legislation contained in the Act of 1858 is strictly limited to the purpose to which I have alluded, merely prohibiting an unqualified person from passing himself off as a qualified practitioner. Accordingly, it is so provided by the Section in question. The provision as to registration may, I think, be excluded from consideration, as it seems to me to have no possible application to any of the facts adduced before me in evidence in this case. The first information charged the defendant that he used the description "oculist and aurist," thereby implying that he was recognised by law as a practitioner in medicine. That charge, in my judgment, cannot be sustained. I see nothing in the mere employment of this description to warrant an implication therefrom that the defendant was recognised by law as a practitioner in medicine. The informant, far from establishing by evidence the legitimacy of such an implication, actually himself admitted in cross-examination by Mr. Child that he never knew a qualified medical practitioner describe himself simply as an oculist and aurist. This testimony, to my mind, destroys the whole fabric of the informant's case, so far as the first information is concerned. Admitting to the full the importance of securing the application of the most profound knowledge and the exercise of the most consummate skill, I do not see how the conferring of a monopoly on registered practitioners, would afford an effectual safeguard for the public. I now turn to the consideration of the second information. The substance of it is that the defendant pretended to be qualified as a surgeon, and this pretence may, of course, be established by the evidence of facts and circumstances, tending

to show that the defendant led the public to conclude that he was in truth a duly qualified practitioner. My attention was directed to two documents, in which the defendant described his place of business as an "eye and ear dispensary." If the case had rested on these documents alone I should have regarded them as wholly insufficient to substantiate the charge against the defendant. On the contrary, they clearly point to the defendant as being an optician by trade, pursuing, in conjunction with that trade the vocation of an unqualified practitioner in the treatment of the eye and the ear. The defendant had issued advertisements and placards announcing his place as an Eye and Ear dispensary. It appears from the evidence of Mr. Pridgin Teale that there was formerly an institution in Leeds known as the Eye and Ear Infirmary, which was afterwards merged in the General Infirmary. In a circular issued by the defendant, he reproduced an extract from a local paper. The defendant, of course, is not responsible for observations of writers in the press, but when he reproduces them in his advertisement without comment or modification, I think he must be clearly regarded as assuming responsibility by adoption. Any reasonable man would infer from the circumstances that the defendant was a qualified medical practitioner, and, what is more, I have little doubt that the gentleman of the press who actually penned the sentences extracted by the defendant wrote them under the belief that such was the case. I think, with a view to guidance of the defendant in future, I ought to say that apart from the reference to the "Leeds Eye and Ear Dispensary," and the extracts from the press, I should probably have answered the question of fact in his favour, and dismissed the information. As it is, I impose a penalty of £5; but the first information, which was mainly relied upon by the prosecution, will be dismissed. I make no order as to costs.

ENGLISH NEWS.

A FATAL DOSE OF LINIMENT.—A sad case of poisoning occurred in Leicester last week, whereby George Hicks, aged sixty, a hatter, lost his life. It appeared that deceased had been ailing for some time past, and, besides taking medicine, had been supplied by his doctor with a bottle of liniment for external use. During Friday evening it is supposed that he took up the wrong bottle, and drank a quantity of the embrocation instead of the liniment. Soon afterwards he became very ill, and a doctor was summoned, but in spite of the latter's attentions he gradually got worse, and succumbed on Saturday morning. At the inquest, John Brown, an assistant of the Foresters' Dispensing Association, said the deceased was a member, and, in accordance with the prescriptions of Dr. Hewlings, the liniment was composed of aconite, belladonna, and chloroform in equal proportions. The medicine and liniment bottles were very similar, and he had often suggested to the patients the desirability of using stained blue bottles for poisons.—Dr. Griggs, who was called in to the deceased after he had taken the poison, gave it as his opinion that death was due to aconite poisoning.—The Coroner said it was very desirable that patients at dispensaries where they had to provide their own bottles should provide special bottles for poisonous lotions, in order that these fatal mistakes might not arise.—The Jury returned a verdict of "Death from misadventure."

CHEMISTS' LICENCES.—At the annual licensing sessions, at Exeter, on Tuesday last, Mr. C. T. K. Roberts, solicitor, applied on behalf of Messrs. T. Martin and F. W. Kitts, executors of the late Mr. Fredk. Stone, chemist, of 166, Fore Street, for a licence to sell medicated wines. There was, he said, no intention to start as wine merchants. The application was granted. Mr. F. H. H. Orchard applied on behalf of Mr. H. Gadd, and Mr. J. Wippell for a licence to sell spirits at Nos. 97 and 98, Fore Street. He said the applicants already held a medicated wine licence. The application was granted.

FATAL ACCIDENT TO A BOTANIST.—Dr. Slade King held an inquest at Ilfracombe on Wednesday, August 26, on the body of Mr. Henry Vidal Moxon, an ardent botanist and a medical student at the University College, London, son of Captain Moxon, of the Indian Army, residing at Hillside House, Torrs Park, Ilfracombe, who was killed on the previous day while on a botanical excursion by falling from the cliffs of Torrs Walks to the beach below.—Dr. Gardner said deceased had broken his neck and fractured his skull. He was of a very cheerful disposition and most enthusiastic in his work, being possessed of considerable mental ability.—Dr. King said he was grieved at the death of such a clever young man, who was most prominent at the science and art classes.—The jury returned a verdict of "Accidental death," and, with the Coroner, expressed their deepest sympathy with Captain and Mrs. Moxon and family in their sad bereavement.

A LATE CHEMIST'S FAILURE.—At the offices of the Official Receiver, Sheffield, on August 26, there was called a meeting of the creditors of Leonard William Stanton, chemist and druggist, lately residing at 32, Denmark Road, Northampton, and now in lodgings at 10, William Street, Denaby Main, near Rotherham. There were no creditors present. The Official Receiver (Mr. J. C. Clegg) said that the debtor filed his petition on August 6, and, according to his statement of affairs, he owed to unsecured creditors £579 11*s.* 9*d.* He paid his solicitor £12 towards the cost of filing the petition. His assets, said to consist of book debts, amounted to £99 8*s.* 11*d.* He commenced business as a stationer in Kensington, London, about fourteen years ago without any capital. He carried on that business until about five years ago, when it was sold for £800, and some of the creditors were paid. He afterwards became assistant manager as a chemist to his brother, and disputes arose between them on money matters. An action was commenced by the bankrupt against his brother, but was not proceeded with. In that action the bankrupt claimed to be entitled to large sums of money from his brother, and the brother filed a defence disputing the bankrupt's claims, and alleging that he was really indebted to him. As the book debts, £99 8*s.* 11*d.*, included £95 odd alleged to be owing by the brother, and which was disputed, the assets for realisation seemed to be very hazy. Debtor admitted having lost money by betting—(Debtor: A very small amount, sir. So small——). He had not given any account of it yet. The interest he had under his father's will had been mortgaged, and particulars of that had not yet been obtained. The matter was left in the hands of the Official Receiver.

WELSH NEWS.

A CHEMIST'S SON POISONED.—An inquest was held at the Ivor Castle Hotel, Dowlais, Glamorganshire, on Monday, with respect to the death of Augustus Bertie Rees, 23, eldest son of Mr. R. P. Rees, chemist and druggist, High Street, Dowlais. From the evidence, it appeared that deceased went to bed shortly before 11 o'clock, and about midnight was heard to scream out. His father ran to him, and found he had taken strychnine. As there was no evidence to show that deceased had committed suicide, the jury returned a verdict of "Death from strychnine poisoning, but whether taken by misadventure or with any motive there is no evidence to show."

HICKS AND CO., LIMITED.—The seventh annual general meeting of Messrs. Hicks and Co., Limited, wholesale and retail chemists, was held at the company's premises, Queen Street, Cardiff, on Monday. Mr. A. Coleman presided, and there were present Messrs. Griffiths, Dovey, Pearce, Knahe, and Evans, shareholders. The report and balance-sheet were discussed at some length, and eventually adopted. The retiring director, Dr. H. N. Davies, and the auditors, Messrs. Clarke and Dovey, were unanimously re-elected. The meeting closed with a vote of thanks to the chairman, managing director, and auditors.

IRISH NEWS.

FAILURE OF A CHEMIST.—At the Dublin Bankruptcy Court, on Wednesday last week, the affairs of John Darcy, chemist and druggist, were investigated. The bankrupt, on being adjudicated as such in April last, quitted Ireland precipitately and went to South Africa, but had since returned to Ireland, and was present in Court during the hearing of the case. It was stated by the assignee that creditors who early had proved their respective claims received 15*s.* in the £, but later claimants only got paid one-half of their accounts. The case was postponed until the 8th inst.

DRUG CONTRACTS.—The Board of Guardians at Mullingar are highly indignant at the Local Government Board for having cancelled Mrs. English's contract for the supply of drugs and medicines to the union. The difficulty of choosing the lowest tender came up at the last meeting of the Guardians. It was stated that fully forty lists of wholesale houses would have to be compared for each drug to find the cheaper price, and Mr. Lennon, one of the Guardians, despairingly remarked—between medicines and medical men we are in a hot shop. Eventually it was decided to break the present contract and re-advertise for a new contractor.

NOTES AND FORMULÆ.

EXTRACTION AND PURIFICATION OF TAXINE.

This alkaloid is extracted from yew leaves by Vreven as follows:—Fresh yew leaves, cut up small, are extracted with water acidulated with tartaric acid, evaporated on a water bath to a low bulk, mixed with sand to obtain a paste, and then exhausted with a mixture of equal volumes of water and alcohol in successive portions. This extract is filtered, evaporated, rendered alkaline with ammonia, and shaken out with benzol. The solvent separates fairly well from the emulsion formed by the ammonia on the addition of a little alcohol. The benzol extract is partially distilled, and, on cooling, throws down a trace of precipitate, apparently alkaloidal, but not taxine. This is filtered off and the taxine shaken out from the residual benzol with dilute hydrochloric acid. The acid solution gives with ammonia a plentiful precipitate, which is taken up with ether. This solvent on evaporation leaves the impure taxine as a hard yellowish amorphous mass, giving a red coloration with sulphuric acid a slight blue tint with nitric acid, passing to blue on touching with fuming hydrochloric acid. The alkaloid is further purified by re-solution with hydrochloric acid and precipitating with an excess of ammonia, being allowed to stand in contact with the alkali for twelve hours. The taxine subsides, leaving a greenish liquid, which is decanted and filtered. The alkaloid remaining does not give a green coloration on again macerating with ammonia; it still gives the characteristic reaction with sulphuric acid, but no longer with nitric or hydrochloric acids. As far as dependence can be placed on mere colour reactions and alkaloidal reactions, it would seem that more than one alkaloid is present in the yew (*Bull. Gén. de Thérap. Sect. Pharm.*, i., 261, after *Annales de Pharm. de Louv.*).

TESTING BISMUTH SALICYLATE.

A recent examination of commercial samples of bismuth salicylate shows that notwithstanding the fact that Dott (*Ph. J.* [3], xxv., 582) has already drawn attention to the matter, it is still necessary to test that salt somewhat critically for the presence of uncombined salicylic acid. This is easily effected by digesting a known weight of the salt in cold methylated spirit, filtering and evaporating the solvent in a tared vessel, when the free acid will be left as a residue, which may be weighed. A sample has been met with containing more than 50 per cent. of uncombined acid; this was of exceptionally "good colour," and further examination of light-coloured samples showed that these invariably contained more than traces of free acid.

APPLE PULP TO DISGUISE THE TASTE OF QUININE.

Rasp finely a somewhat sharp apple, spread over it the dose of quinine, cover with another layer of pulp, and swallow. The taste of the alkaloid is entirely masked (*Rev. de Therap.*, lxiii., 383).

NEW METHOD FOR THE ASSAY OF OPIUM.

The following rapid method is recommended by Looff for the determination of the morphine in opium. Five grammes of the finely-powdered sample are rubbed down with 5 C.c. of water, washed into a tared flask, and diluted to 44 grammes. After shaking for fifteen minutes, 1 gramme of sodium salicylate is added, the whole shaken again, and filtered. This treatment removes the substances which usually hinder the precipitation of the alkaloid. 25 8 grammes of the filtrate (=3 grammes of original opium) are then treated with 3 grammes of ether and 1 gramme of ammonia solution. The mixture is shaken for ten minutes, the morphine collected on a small filter, the flask rinsed twice with 5 C.c. of water, the precipitate washed therewith, and dried. It is then extracted with benzol, dried, and weighed (*Analyst*, xxi., 163, after *Apoth. Zeit.*).

NEW REMEDIES.

[*The notes given under this heading embody recent suggestions in therapeutics. They cover both new drugs and preparations, and old ones under new aspects. The word "parts" is used to represent parts by weight, both for solids and liquids.*]

METHYLENE BLUE IN MALARIA.—When given in cases of malaria, in doses of ten centigrammes, in capsules, repeated six or eight times daily, Roettger has experienced the best results with methylene blue—the plasmodia disappeared and the spleen was restored to its normal condition without a single relapse. The period of treatment extended from a minimum of eight days to a maximum of thirty-three. No bad effects were observed, excepting, at first, in some cases, a slight feeling of nausea.—*Nouv. Rem.*, xii., 399, after *Deut. Med. Woch.*

THYREOIDIN, THE ACTIVE PRINCIPLE OF THYROID.—Continental experiments, according to Le Jeune, go to prove that thyreoidin possesses the full activity of the thyroid gland, and has been successful in all cases where the physiological needs of the patient indicated its use. Nitrogenous metabolism is increased by its use 15 or 16 per cent. In myxœdema and sporadic cretinism, in cachexia strumipriva, and in endemic cretinism equally good results have been obtained. It has also been employed with success in the treatment of obesity. It is best administered in tablets, the average adult dose being six tablets daily, each containing 4 grains, three tablets being given to children.—*Therapist*, vi., 52.

DUBOISINE INTOLERANCE.—It would appear from the observations of Veasey and others that the idiosyncratic intolerance of duboisine is not by any means rare, a fact which should be borne in mind when handling this powerful alkaloid. A case is narrated of a patient being treated for astigmatism by the instillation of one drop of a 1 in 300 solution, who developed symptoms resembling alcoholic intoxication. Dryness of the throat, and a rash on the hands were noted; for half an hour he was incapable of voluntary movement; at the expiration of that time pallor succeeded to congestion, the voice became feeble, and the patient gradually recovered. —*Rev. de Thérap.*, lxiii., 379, after *Philadelph. Polyclin.*

GUAIACETIN, A CREOSOTE SUBSTITUTE.—A new compound, called guaiacetin, is recommended by Strauss for the treatment of tuberculosis. It is given in doses of 50 centigrammes several times a day. In the large majority of cases not the least gastric disturbance is noted, even in those cases where creosote has had to be abandoned.—*B. M. J. Epit.*, 2/96/11, after *Centralbl. f. inn. Med.*

POTASSIUM CHLORATE IN BUCCAL TUMOUR.—By combining the internal administration of an aqueous solution of potassium chlorate, 1 in 30, with the free application of the powdered salt directly to the surface of the tumour, Dumontpallier has successfully treated several cases of buccal tumour. The treatment should be continued for two or three months.—*Bull. Gén. de Thérap.*, cxxi., 87.

CREOSOTE VALERIANATE.—Under this name, what is presumably the valerianic ester of guaiacol has been experimented with by Grawitz in cases of phthisis and gastero-enteritis: "Valerianate of creosote" is described as an odourless body, the freedom from smell enabling it to be given to those patients who could not tolerate creosote. It is given in capsules containing 20 centigrammes; from three to nine capsules being given daily.—*Revue Medico-Pharm.*, iii., 196.

RESORCIN IN ALOPECIA.—The following ointment applied to a limited area of the scalp at one time is recommended by Brocq:—Resorcin, 1½ grain; quinine hydrochlorate, 3 grains; vaseline, 1 ounce. If the falling off of the hair persists, from 5 to 15 minims of tincture of cantharides may be added to the above ointment, or this stronger preparation may be substituted: Resorcin, 3 grains; hydrochlorate of quinine, 5 grains; precipitated sulphur, 30 grains; vaseline, 1 ounce. Should either of these ointments produce much irritation, an ointment of 20 grains of borax and 100 grains of vaseline should be applied. The author also combines 5 grains of salicylic acid with the above ointment in certain cases. The scalp should be occasionally cleansed with warm soap and water containing a little ammonia.—*Therap. Gaz.* [3], xii., 469, after *Journ. des Pract.*

CORRESPONDENCE.

All Articles, Letters, Notices, and Reports intended for publication in the Journal, Books for Review, and communications respecting Editorial matters generally must be Addressed "Editor, 17, Bloomsbury Square, London," and not in any case to individuals supposed to be connected with the Editorial Staff. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

Any Instructions from Members, Associates, and Students of the Pharmaceutical Society, with reference to the transmission of the Journal, should be sent to the Secretary — Mr. Richard Bremridge,— 17, Bloomsbury Square, London.

Business communications—including advertisements, orders for copies of the Journal, and instructions from Subscribers respecting transmission of same—must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London. Cheques and money orders should be made payable to "Street Brothers."

Correspondents who wish notice to be taken of their communications must write in ink, on one side of the paper only, and should authenticate the matter sent with their names and addresses—of course not necessarily for publication. No notice can be taken of anonymous communications.

Drawings for illustrations should be executed twice the desired size; clean, sharp lines being drawn with a pen and liquid Chinese ink. Shading by washes is inadmissible. Photographs can be utilised in certain cases.

Names and Formulæ should be written with extra care, all systematic names of plants and animals being underlined, and capital letters used to commence generic but not specific names.

Reprints of articles cannot be supplied unless authors communicate with the Editor before publication.

Japanese Fennel.

Sir,—Mr. Kirkby's criticism of my paper on the above subject has remained unanswered owing to my absence from England. It is distinctly stated in the paper that the number and size of the vittæ of the Japanese fruits are characteristic of fennel and quite distinct from anise; the only resemblance in the fruits is in point of size. Mr. Kirkby writes: "It may appear preposterous to hint that such experts (Messrs. Schimmel and Co. and myself) should fail to detect the odour of anise in their specimens, and I would not venture to do so if it were not for the fact that the late Professor Maisch ('Organic Materia Medica,' 4th edition, p. 350), described the odour of fennel as being 'anise like.'" It is evident that Mr. Kirkby has overlooked that I stated that Japanese fennel oil contained about 75 per cent. of anethol. This is the sole odorous constituent of anise oil, of which it usually contains from 85 to 90 per cent.

September 1, 1896. John C. Umney.

Pills of "Ext. Cascar. Sag."

Sir,—There has, I believe, always been some difficulty in keeping pills of "ext. cascar. sag." I venture to suggest to my fellow-readers of the Journal a very simple method, viz., to keep the pills embedded in pulv. creta gallic. in a bottle, well stoppered. By this means I have kept pills in perfect shape from three to six months. Has it ever occurred to you that the preparation of glycerin might be advantageously increased in the B.P.? I have recommended with great success to many local members of the medical profession when they do not require syrup, or rather sugar, the following:—Glycerin aurant.; glycerin papav.; glycerin limonis; glycerin scillæ; formulæ of which, if required, I should be pleased to give as substitutes for the corresponding syrups.

Romsey, August 29, 1896. Frank Oram.

Liq. Bismuthi et Ammonii Citratis.

Sir,—Since the publication on the above subject of Mr. J. F. Brown's letter of July 11, I have looked in vain for further correspondence. Quite recently I dispensed the following mixture perfectly clear, but the patient returned it next day suggesting that it had been incorrectly compounded, for when dispensed by a chemist in another town the mixture was quite milky:—

℞ Sodæ bicarb.	ʒii.
Liq. bism. et	ʒiss.
Ammon. citrat.	
Liq. morph. acet.	ʒii.
Syr. simpl.	ʒi.
Aq. ad	ʒviii.

M.

September 1, 1896. "Bismuth."

ANSWERS TO QUERIES.

[*Queries addressed to the "Editorial Department, 17, Bloomsbury Square, W.C.," will be replied to in the Journal as early as possible after receipt, but the Editor cannot undertake to reply to them through the post, nor is it always possible to publish answers the same week. Questions on different subjects should be written on separate slips of paper, each of which should bear the sender's name or initials. Readers requiring working formulæ for special preparations, and intimating their wants to the Editor, will be assisted as far as may be practicable. The word "parts," when used in formulæ, invariably indicates parts by weight.*]

Specimens.—(1) It cannot be named without stem leaves. It is probably a species of *Helianthus*. (2) Cannot say in the absence of flower. It is not a British plant. [*Reply to* R. G. M.]

Non-Alcoholic Coca Wine.—We doubt if you will be able to make a satisfactory non-alcoholic coca wine; the non-alcoholic "wines" must necessarily be either not really non-alcoholic or else not wines; the terms are contradictory. Many of the so-called non-alcoholic wines contain a good deal of spirit. Perhaps you may obtain what you require by percolating powdered coca leaves with a mixture of equal volumes of glycerin and water, acidulated with 1 per cent. of citric acid. Exhaust 8 ounces of coca leaves with the menstruum, percolating up to one pint. Moisten the leaves with a little of the mixture and allow the damp powder to stand for an hour before packing in the percolator, and do not pack it too tight. [*Reply to* Cytis.]

QUERY.

"A. J. W." wishes to be informed how to prepare a cork or plug to resist the action of a mixture of strong ammonia and turps.

PUBLICATIONS RECEIVED.

What it Costs to be Vaccinated. By Joseph Collinson. Pp. 1 to 46. William Reeves, 185, Fleet Street, E.C. 1896.

Festschrift des Deutschen Apotheker Vereins. Zur 25 Haupt-Versammlung. Pp. 252. Berlin: Selbstverlag des Deutschen Apotheker Vereins. 1896.

OBITUARY.

Colbeck.—On August 12, John Colbeck, Chemist and Druggist, of Tickhill. Aged 55.

Priestley.—On August 27, Henry Priestley, Chemist and Druggist, of Sheffield. Aged 77.

Dore.—On August 31, John Reed Dore, Pharmaceutical Chemist, of Huddersfield. Aged 64.

Clark.—On August 31, John Clark, chemist and druggist, Sheffield. Aged 52. Mr. Clark was an Associate of the Pharmaceutical Society, and one of the best known and most respected members of the craft in Sheffield. His death will be deeply regretted by all who were favoured with his acquaintance. Essentially a self-made man and of unimpeachable commercial integrity, he was exceptionally successful in business. He was also for many years a most enthusiastic naturalist and took a great interest in the advancement of pharmacy, doing all that lay in his power, though in a quiet and unassuming manner, to encourage progress in educational matters.

Communications, Letters, etc., have been received from Messrs. Andrew, Bond, Bramley, Chattaway, Cosenza, Dawson, Dickenson, Dodd, Duncan, Felix, Fraser, Fritzsche, Glendenning, Herman, Howorth, Luff, Mackenzie, Merck, Milne, Muir, Mumbray, Oram, Parker, Peck, Poole, Ralph, Saunders, Sharp, Sumner, Tovey, Wain, Williamson, Wolstenholme.

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PHARMACEUTICAL EDUCATION—PAST, PRESENT, AND TO COME.

BY BARNARD S. PROCTOR.

Methods—Old and New.

Past.—The old method was, every man for himself; learn whatever you can that is useful to you; keep your own secrets, keep others ignorant, make them think that your knowledge is very deep, that your philosopher's stone is capable of great things which are not to be seen and understood by ordinary mortals. This is the education suited to the pope, to the parson, or the fossil, men who think light irreligious and flashy unless it be dim. In "pre-charter" days those studied who wished to do so. Many did not wish for any systematic study after leaving school; now the terminus is pushed a little further on, and many cease systematic study when examination is passed, but will still pursue one or more congenial subjects, while they drop those which do not afford them pleasure or palpable profit.

Present.—It is now the turn for the public and the professsors to be educated, the former to learn what is good for them, the latter to learn how to bring into existence the pharmaceutical forces requisite for the safety of the nation. It is only by the development of sound practical ideas on the part of the public, the legislature, and the teachers that satisfactory progress within the craft can come about.

Future.—In the future there may be an army of pharmacists—10,000 men, 1000 corporals, 100 captains; it may be 10,000 factotums, or it may be nothing that we can imagine from our present experience and powers of prevision. Our present concern is with the doings of to-day, and our care must be that any step we take must lead to a solid foundation from which future steps in advance may be taken.

The "Pre-Charter" Period.

We regard the past as an imperfectly written history, and the future as an undeveloped mine; from both of these we should like to learn much for present guidance, but the past is obscure in proportion as its distance increases, and the future is obscure in proportion to the squares or the cubes of its distances. We can do but little beyond observing the facts as we find them in the present, excluding as far as possible our prejudices or the effects of stained glass windows and blue spectacles.

We have ample evidence that the circumstances of the "pre-charter" period were capable of producing able men learned in pharmaceutical matters. It is not proved, nor is it self-evident, that the united influences of the Charter, the Act, and the School have done more to produce eminent men than would have been done by natural development without these fostering or coercive forces. When I look back fifty years and think how scarce scientific apparatus was—microscopes were rarities and spectroscopes unknown, electricity was little thought of, except as experiments with a glass cylinder and a Leyden jar, the spectrum was a pretty mystery without application; a "camera" was a little erection on the top of a hill in which you could see the image of someone's clean clothes lying on the grass to dry; photos were little known except as silver plates with mercurial images—when I think how familiar the general public now are with such things and a host of others equally unknown in my young days, I question whether the Square men, or the Square prizemen, of to-day occupy as eminent a position, in comparison with the average educated tradesman of our time, as the leaders in pharmacy of fifty years ago did in comparison with other men of their day. These founders of pharmacy followed the natural law; they studied because they wanted to know.

The Students of To-Day.

As a result of examinations, curriculums, etc., the students of the present day mostly study because they want to pass an examination or two. When the operation of a natural law is interfered with we generally have to pay a penalty for the interference, and it may be suffer more from the change than was suffered from the evil which it was intended to remove. The curriculum and examinations are of the nature of hot houses and forcing frames, designed to put a man at the age of twenty-five into the position which, under natural circumstances, he could only attain at the age of thirty-five. But instruction forced upon anyone by external agency or coercion is abortive for good, because not being a natural growth it is not permanent, and cannot bring forth good fruit. The Square is not yet "guaranteed to unfit a man for a business career."* And it is well to note that the scientific German speaks of the "increasing uselessness of those who have only scientific education."† While we Englishmen are talking about the success of the Germans being the consequence of their superior scientific training, they are talking about the superior success of the English resulting from the manual and technical education proceeding step by step with the mental culture. Without making any comparison of German with English pharmacists, I have no doubt that the soundest progress is made where work and thought go hand in hand. German intellectual culture as a preparation for the English free trade would have little chance of success. If the culture and training are to be of the leisurely and refined character which disqualifies a man for the rough and tumble competition to which an English tradesman is exposed, and from the constant complaints that the qualified man cannot compete with his ignorant and cutting opponents it is evidently considered (by the thoughtless many) that education disqualifies a man for the battle of life, our only alternatives are to have the curriculum and examinations plus the limitation of pharmacies, and legislation of a fixed scale of charges, or to have the freedom of the trader to take as much education, and only as much, as he feels profitable to him in the prosecution of the line of business he professes to pursue, and leave him free to deal in all but dangerous drugs on such terms as he chooses. The educated and trained man would still have the advantage unless a false education (like the education of a Chinese lady's feet) should emasculate his native energy and leave him like a hot-house seedling to perish in the cold blast.

Too Many Pharmacists.

The number of men who can make a living by dispensing and the sale of poisons is limited, not by Act of Parliament, but by natural law; and if the inculcation of professional etiquette leads the pharmacists to neglect reasonable trade customs, they will insure the permanence of the substratum of unqualified men who flourish by the contrast between a bastard professionalism and an open cultivation of free trade in all the largely-consumed articles of materia medica. It would be one of the most difficult tasks the Pharmaceutical Council could contemplate to teach the public to see the advantage of paying increased prices for ordinary drugs or preparations because of their being supplied by learned men. Merchants and manufacturers must and do learn their art, and will continue to supply most things wanted in quantity better than a small operator can produce them. This is a fact which it is scarcely necessary to teach to either the public or the pharmacist. It is only the articles of which the consumption is small or irregular that are better prepared by the seller at the time they are required. The skilled operator, who has not

* *Chemist and Druggist*, Aug. 22, 1896, p. 314.
† *Pharmaceutical Journal*, Aug. 22, 1896, p. 168.

only passed an examination, but has practised his calling on such lines as to develop the germs of knowledge which passed him through the examination room, till they have evolved a habit and a power to meet and overcome all little troublesome difficulties, is in a position to flourish more abundantly than any one who is satisfied with having got his certificate, then ceases to study. But how is the habit to be formed? Where there is little dispensing done, and little opportunity for chemical and pharmaceutical operations, the wits and wisdom of the scholar grow rusty, and if he has the good luck to develop, as we often see in small agricultural towns, into postmaster, banker, or manure merchant, it is because he has known better than his teachers what he should learn, and what he should cultivate.

PHARMACY AS AN ADJUNCT ONLY.

One thing that we all must learn is that pharmacy must be unremunerative to three-fourths of the country pharmacists, except as an adjunct to trade of a miscellaneous character, and the pharmacist will not get the miscellaneous trade unless he learn the arts and habits of trade and practise them in as satisfactory a manner as his competitors. At times when I have gone into small neighbouring towns and found the chemist acting as banker I have felt respect for him, without asking after his curriculum or examination. His position was proof that he had learned to be a useful and trusted member of society, and thus doubled the value of his pharmaceutical certificate. In many such towns the dispensing done by the two or three chemists in a year will not amount to as much as one pharmacist in a large town will do in a week. The work is not enough to keep alive the habit, which was formed in embryo as a preparation for examination. More real good would be done towards insuring competence in those engaged in dispensing by reducing their number till there were not more engaged in pharmacy than could find pretty constant employment for their hands in working with drugs, buying, selling, compounding, etc. A creditable passage through the examination room at the age of twenty-one or twenty-three will do less to ensure a man's competence at thirty than the habitual work of a dispensing establishment where the better part of each day is occupied with drugs. It would be more to the credit of the Pharmaceutical Society that 1000 chemists and druggists should be competent to render satisfactory services to the public than that ten or a hundred illustrious men have been brought up in the Society's School, and have ceased to be pharmacists.*

HEALTHY PHARMACEUTICAL EDUCATION.

For pharmaceutical education to be healthy it should be in response to the demand of pharmacists who feel it necessary for their success. There will be no fear of superficial reading and cram when all are "anxious to obtain the knowledge for the purpose of carrying on an honourable calling."† The anxiety to obtain knowledge is good security that it will be well learned, and the fact that it is for the purpose of carrying on the calling, will insure its practical and habitual application. The school ceases to be creditable when its aim is to enable candidates to pass an examination, but is eminently creditable so long as it succeeds in fitting the scholar or helping him to fit himself to carry on the honourable calling of pharmacy with satisfaction to his customers and himself. If it were possible for examinations to prove whether or not a candidate had "competent skill, knowledge, and qualification," it might be a legitimate procedure to have the teaching directed to the preparing of the student for the examination. But no examination can be a proof of qualification unless it includes the testing of a man's habitual work—work which he performs without an idea that it will be submitted to criticism. It is not knowledge which fits a man for the work of life, but the habit of doing that which knowledge shows to be desirable. Habit is of slow growth, and cannot be formed without considerable time. Much is said about the nervous candidate under examination, and justly so, but the opposite must also be kept in view, that many know what to do and how to do it when impelled by the desire to satisfy an examiner, yet they will not do so well behind the tradesman's dispensing screen. It is well to know how a duty should be done; it is better to be able to do it; the best thing is to do it habitually. In caligraphy a man may know what form letters may have: he may be able by taking care to form them as they should be formed; but he only is a good writer who habitually forms his letters well—well, that is, so as to be easily read, though written with facility and suited to the place they have to occupy. So it is with pharmacy; it is not the knowledge, not the ability, but the habit which makes the good man. There are few things which give so much insight into a man's habitual work and care as an inspection of his handwriting, provided you have a specimen which has been written without any view to its being criticised. Unfortunately, the Board of Examiners have not facility for getting hold of candidates letters to their companions, or they would have a valuable guide as to which men were habitually careful and accurate.

WHAT EXAMINATION DOES.

Examination does something towards providing that the graduate is competent for his business—examination plus a curriculum does something more, but the two together are not equal to the customer's experience, as an indication of whether a tradesman supplies the wants of the public. The public will have regard to the social or civil qualities, and the commercial side of the tradesman's character, and his habitual correctness in his transactions; and no amount of scientific drill will compensate for deficiencies on these points, about which his patrons would feel themselves competent to judge. A readiness to take up new ideas, and new lines of policy, new views of subjects which may be entertained by those with whom we may be dealing, is often wanting in Englishmen, perhaps more especially in those who have had good schooling and a thorough drilling, rather than the education developed by practical work, and the contending with natural difficulties. A curriculum followed by an examination is like a brick-making machine, the clay is put in, the pressure is put on, and the square man is turned out; perhaps very soft at first; and it depends upon what quality he is made of—how he stands fire, and whether he remains square for the term of his days.

THE APPLICATION OF KNOWLEDGE.

The professors may know that they have taught a great deal that ought to be useful to the members of their class, but the students may not have learned much. Knowledge to be valuable should be knowledge with understanding, and even with understanding it is incomplete without the addition of skill to put it into practice and judgment as to its use; the combination of these constitutes technical education as it should be. The research which goes on in the back shop is the greatest value to the greatest number. The fear is that the Square, with its laboratory, lecture rooms, and research departments, tends to impress upon the students the idea that research can only be accomplished with the aid of elaborate appliances. So I fear the School makes more dandies than lions, and more lions than find food in pharmacy. The long list of lions of the School, which Mr. Carteighe detailed in 1892, shows the power which has been developed in ex-pharmacy students, but there is little advantage to pharmacy in planting lion's teeth—especially in ass's jaws—associates I mean; they do not help him to eat thistles. In country places where

* Compare list given by Mr. Carteighe in his address, October, 1892.
† See Mr. Carteighe's address, quoted above.

thistles mostly do grow, pharmacists do best if they are all-round men with much aptitude, which cannot be learned from Square teachers. He is a happy man who has the faculty of adding continually to the store of his knowledge, and still more fortunate if he has a readiness in applying the knowledge he possesses. A man would not make a good pharmacist if he did not know the difference between a water hen and a water cock, but if he knows this, and also knows that the hen may be found in the fen and the cock in the back shop, he will find this latter item of information of constant practical use. The knowledge which a man gains before examination should be like a bundle of roots, capable of growth, and though some are likely to decay, others ought to go on developing and yielding him profit and pleasure for the remainder of his days. It does not follow that the knowledge which is most profitable is directly productive of the greatest number of pence. I have learned more botany since I passed my examination than I did before, and am not aware that I have profited a single penny directly from the acquaintanceship, but the profit of life is not counted entirely in pennies.

The Necessities of Existence.

The little things which make for pence, however, must not be neglected, whether they be Square knowledge or not. The seeds of nummularia should be known to every man. Some years ago while staying in a small town on the borders of Yorkshire I went to the best chemist in the place, and found ample appearance of trade, but it was of the eggs and bacon kind, and when I presented a prescription, a boy was sent to seek for the young man who could make up medicine. The old gentleman who governed the establishment had so many more important and more profitable duties to attend to that he did not care to touch rhubarb and blue pill. Is it right that a graduate in pharmacy should be set to get half a stone of catmeal and threepennyworth of blacking? It certainly would not be right to stand in the way of his doing such useful work, nor would it be right or possible to limit him to such work if he could fill his time with useful work in pharmacy. For the present, pharmaceutical education must provide that the pharmacist at the time of his examination has such knowledge as to enable him to see danger ahead and to avoid it, but the circumstances of the examination room and the shop are very different.

The Examination Room *v.* The Pharmacy.

The examiner puts a little difficulty into the hands of the candidate and insures that he has no interruption and nothing to distract his attention. In the shop a customer puts into his hands a prescription, and wants to talk the politics of the day while the medicine is being made up, and if the dispenser has any hesitation and fails to look happy under trying circumstances it is apt to be a bad job for him, and a worse job still if in the endeavour to conceal his difficulty he fails to do the right thing. Coolness will be just as difficult to maintain under the eye of the customer as under the observation of the examiner, who knows the difficulty which has been presented, and knows how much it is reasonable to expect from the sufferer under torture. Candidates are very like asafœtida—if they have had a good grind and keep very cool they may pass through the sieve very satisfactorily, but under the influence of less rigorous surroundings they may again run into amorphous lumps. The curriculum and examination together are intended to do something towards securing that equality of opportunity which is so much desired by the simple-minded philanthropists of the present day, but so long as pharmacists have different fathers and mothers there will always be inequalities. The first question in the Preliminary ought to be "What is your mother?" and it would be a mercy if every candidate were rejected who could not say that his mother was a careful and thoughtful woman, from whom he had inherited, and by whom he had had developed these same valuable qualities. If this were happily so, the diploma would only be a touch of gold upon the true metal of which the man was made.

The Limitation of Pharmacists.

If pharmacists are to be skilled men their numbers must be limited to so many as can make a living by the practice of that calling. The limitation might be by Act of Parliament, as we find in some other countries, or it might be by natural law. If Act of Parliament could secure pharmacy to the qualified man, and could ensure that no others should work the craft, natural law would probably do the rest. If the practice of pharmacy provides the income that enables a pharmacist to pay for eggs and bacon, he will probably prefer to practise pharmacy and eat eggs and bacon rather than sell eggs and bacon that he may live. The qualification required of the pharmacist might so far deter entries into the trade as to keep the numbers within the limit that would find enough work for each to keep his hands in practice and his mind stored with knowledge. The chief difficulty will always be the supply of fairly competent men in sparsely populated districts. This need cannot be neglected in any scheme worthy of national acceptance. The present Minor, followed by a sufficient supply of work to keep the hand well in, would be enough to aim at for a generation or two, and would be better than the Major degree followed by a subsequent stagnation from the want of work to do. The voluntary position of the Major degree will still tempt the better class of men, and as an honorary and scientific distinction it may be made of a higher character than at present, but as a door to legal status it is for the time being too high. Great physicians, great lawyers and great accountants are found in great populations. You may have great bigots in little villages, because bigotry grows greater by want of friction with fellow men; or you may have great philosophers, because solitude and leisure encourage thought; but as men cannot be great pharmacists with little practice, in a truly rural district a Major man will become Minor by degrees, and beautifully less as his dispensing becomes less in proportion to his miscellaneous trade; still, he had better sell ducks' eggs than take to quacking himself. The only truly satisfactory position for pharmaceutical education would be that the public should so appreciate the advantage of their dispensing and the supply of dangerous drugs being in the hands of skilful men, that there should be a demand for high-class pharmacists, and the demand for learned men should create a demand for learning. By no other process would the demand be a healthy, a natural, and a fruitful one.

The Points Summarised.

To summarise my points:—

Competent pharmacists are the product of practice.

Practice depends upon the fraction $\frac{\text{work}}{\text{workers,}}$ and one or other of the factors must be multiplied or divided till there is about a day's work per day for each worker.

In sparsely populated places there must be some trade associated with dispensing.

The best trade for the purpose is the sale of drugs upon trade principles.

The best education is that which a man naturally seeks to enable him to practise his calling with success.

The best examination is that which estimates the habitual endeavour to do good work.

"Pre-charter" circumstances developed many eminent pharmacists.

Post-charter circumstances have not developed greater, perhaps not even greater numbers of, eminent pharmacists.

THE "MINOR" PROBLEM SOLVED.

BY HERBERT BRIDGES.

It is a regrettable fact that so few of the unqualified assistants and apprentices avail themselves of the opportunities for study during their spare time. Some are, unfortunately, in such a position that it would be a difficult matter for them to do so if they wished, but with the majority, I am afraid, it is often a want of energy on their part that prevents them doing so.

In this contribution is given an account of a course of instruction which is being satisfactorily carried out by the majority of the assistants and apprentices of Norwich during their spare time, and it will show, I think, how much of the work included in the Minor syllabus can be accomplished by one or two hours' work each evening during such an extended course.

They are perhaps favoured, in many respects, with opportunities for taking up the work, but it is gratifying to notice that they have not neglected them, and especially that they have recognised what a great advantage it is to accomplish as much of the work as possible during their apprenticeship, instead of endeavouring to cram it up in six, or as in some cases, three months at a school of pharmacy. Evening classes are held by the local school board from September to the following May under the Science and Art Department, and include all the science subjects of the Minor syllabus, and where every facility is given for doing excellent work. In addition, the shops close comparatively early (the majority at eight on ordinary nights), a necessity to enable students to attend them.

The course which has been recommended to them to take up extends over a period of three years.

The first year's work consists of elementary theoretical inorganic chemistry—text-book: Jago's 'Chemistry'; elementary practical inorganic chemistry—text-book: Taylor's 'Analysis Tables'; elementary botany—text-book: Oliver's 'Elementary Botany.'

Second year:—Advanced theoretical inorganic chemistry—text-book: Newth's 'Chemistry'; advanced practical inorganic chemistry—text-book: Valentine and Hodgkinson's 'Chemistry.'

In the latter subject an addition was made to the syllabus last year by the introduction of volumetric analysis—a welcome addition from a pharmaceutical student's point of view.

Third year:—Elementary theoretical organic chemistry—text-book: Perkin and Kipping; elementary practical organic chemistry—text-book: 'Special Tables'; advanced botany—text-books: Vines,' and Oliver's 'Systematic.' Besides these subjects the students are recommended to keep up the work of the previous year.

Lectures are given once a week in each of the respective subjects, and several hours weekly for practical work.

During the summer months, from the beginning of June to end of September, the students continue their study with materia medica and the Pharmacopœia. For the former subject, Wills' 'Materia Medica' is taken as the text-book, with occasional reference to 'Maisch'; with the latter subject, Cripps' 'Galenic Pharmacy' is most useful for reference. The class meets once a week in a back room of one of the student's houses, when a part of the work is gone through thoroughly, in materia medica, specimens being shown and anything characteristic pointed out. The remaining subjects:—prescription reading, etc., are left for the students to acquire in business hours, or during any spare time they may have at their disposal.

This completes the three years' course, and a student who has worked diligently throughout the time would then be in an excellent position to enter for his Minor, after a preparatory course at a good school of pharmacy, and there is no doubt but that he would stand an excellent chance of success.

This course has now been in force two years, and up to the present time the work has been accomplished in a most satisfactory manner. The success, which has been achieved by the students at the May examinations, fully compensate them for the time they have so well spent, and will no doubt stimulate them in their future work.

There are numerous other places having equal advantages as we have here, but where nothing, or at least a very little, is done to assist students in their work for the Minor. The chief fault, undoubtedly, rests with the students themselves by not endeavouring to overcome this difficulty, but this article, I think, will show them that by associating together, and with a determined effort to make use of these opportunities, how easily it can be remedied, and how much real good can be accomplished. Apart from examinations, also, the additional advantages gained from such a course of instruction must be obvious to all students who have any interest at all in their profession; besides which, the stimulus given for study in their young days will always remain, and hence result in a deeper interest in things generally. I am convinced, in my own mind, that if more of these classes were arranged in other places, and instruction given on the same lines as we have here (and I believe in one or two other places), their influence would speedily be felt, with the result that the present discreditable results of the Minor would speedily be altered for the better; also, I believe, there would then be a greater tendency to take up the more advanced work, a result which would materially increase the entries for the Major.

NOTES AND FORMULÆ.

SIMPLE METHOD OF DRYING BOTTLES.

A rapid and simple method of drying bottles before filling them with powders or oils, etc., is to introduce an ounce or so of white mustard seeds, and rotate briskly. The seeds will absorb every trace of adhering moisture, and leave the bottle perfectly dry. This method has been used for many years in some large establishments, but does not appear to be so widely known as its convenience and efficacy deserve.

RESTORING TARNISHED GOLD.

According to the *Jewellers' Circular*, the following mixture is an excellent one for restoring gold which has become tarnished:—

Sodium Bicarbonate	20 ozs.
Chlorinated Lime	1 oz.
Common Salt	1 oz.
Water	16 ozs.

Mix well and apply with a soft brush. A very small quantity of the solution is sufficient for effecting the desired purpose, and it may be used either cold or lukewarm. Plain articles may be brightened equal to new by putting a spot or two of the liquid upon them from the stopper of the bottle and lightly brushing over the surface with fine tissue paper until sufficiently dried off to accomplish the object intended.

QUINOSOL FORMULÆ.

Quinosol wool, 10 per cent.:—Quinosol, 12; distilled water, 80; glycerin, 10; absorbent cotton, 100 parts. *Quinosol gauze*, 10 per cent.:—Quinosol, 12; distilled water, 80; glycerin, 10; alcohol, 46; absorbent gauze, 100 parts. *Quinosol ointment*:—Quinosol, 1; simple ointment, 45; dilute solution of subacetate of lead, 4 parts. For the treatment of burns, bed-sores, etc. *Quinosol dentifrice*:—Quinosol, 10; precipitated chalk, 140; carbonate of magnesia, 50 parts; menthol and eucalyptol of each 1 part (*Nouv. Rem.*, xii, 402, after *Pharm. Central.*).

THE SCHOOL OF PHARMACY AS IT WAS AND IS.

In the Beginning.

THE ENTRANCE HALL.

HE beginnings of the School of Pharmacy were very humble. The need of such an institution was recognised early in the present century, when a medical writer pointed out that a practical knowledge of chemistry, botany, and materia medica could not be acquired in apothecaries' shops, and that no existing institutions afforded all the requisites for pursuing those studies with full advantage. He urged, therefore, that a school should be established in the metropolis, "where all these sciences and arts would be practically taught and illustrated, especially pharmacy, even to the very manipulation of the art." Nothing was done in that direction, however, until the foundation of the Pharmaceutical Society, in 1841, when steps were immediately taken to establish courses of lectures in the subjects of primary importance to pharmacists. To commence with the following introductory lectures were delivered:—

Subject.	Lecturer.	Date.
Materia Medica	Dr. A. T. Thomson	February 16, 1842.
Chemistry	Dr. Andrew Ure	March 2, 1842.
Practical Pharmacy	Mr. T. Redwood	March 16, 1842.
Materia Medica	Dr. J. Pereira	March 30, 1842.
Organic Chemistry	Mr. Geo. Fownes	April 20, 1842.
Botany	Dr. A. T. Thomson	May 11, 1842.

The week after the last of these lectures had been delivered, the first annual meeting of the Pharmaceutical Society was held, and the Council then announced the appointment of three permanent lecturers—Dr. A. T. Thomson on medical botany and materia medica, Mr. George Fownes on chemistry, and Mr. Redwood on pharmacy; also the acquirement of the house, No. 17, Bloomsbury Square, London, which has ever since been so closely connected with the Society's fortunes and the centre of its activity. The work of the School was commenced forthwith by Dr. Thomson, on May 17, 1842, when he lectured before a numerous and attentive audience, in accordance with the first syllabus of lectures as here given:—

SCHOOL OF PHARMACY.

LECTURES.

One course of lectures will be given on Medical Botany, to commence in May and end in July—to consist of two lectures per week, which will be delivered at eight o'clock in the morning.

One course of lectures will be given on Chemistry, to commence in October and end in March—one lecture to be delivered every week, at half-past eight o'clock in the morning.

One course of lectures on Materia Medica and Pharmacy, to commence in October and end in March—one lecture to be delivered every week, at half-past eight o'clock in the morning. The lectures on Materia Medica to be finished before those on Pharmacy are commenced.

FEES.

The fees for attendance on these lectures are half-a-guinea for the course on Medical Botany, half-a-guinea for the course on Chemistry, and half-a-guinea for the course on Materia Medica and Pharmacy, to Members, Associates, and Apprentices connected with the Society; and two guineas for each course to persons not connected with the Society, half of the latter fee to belong to the lecturers.

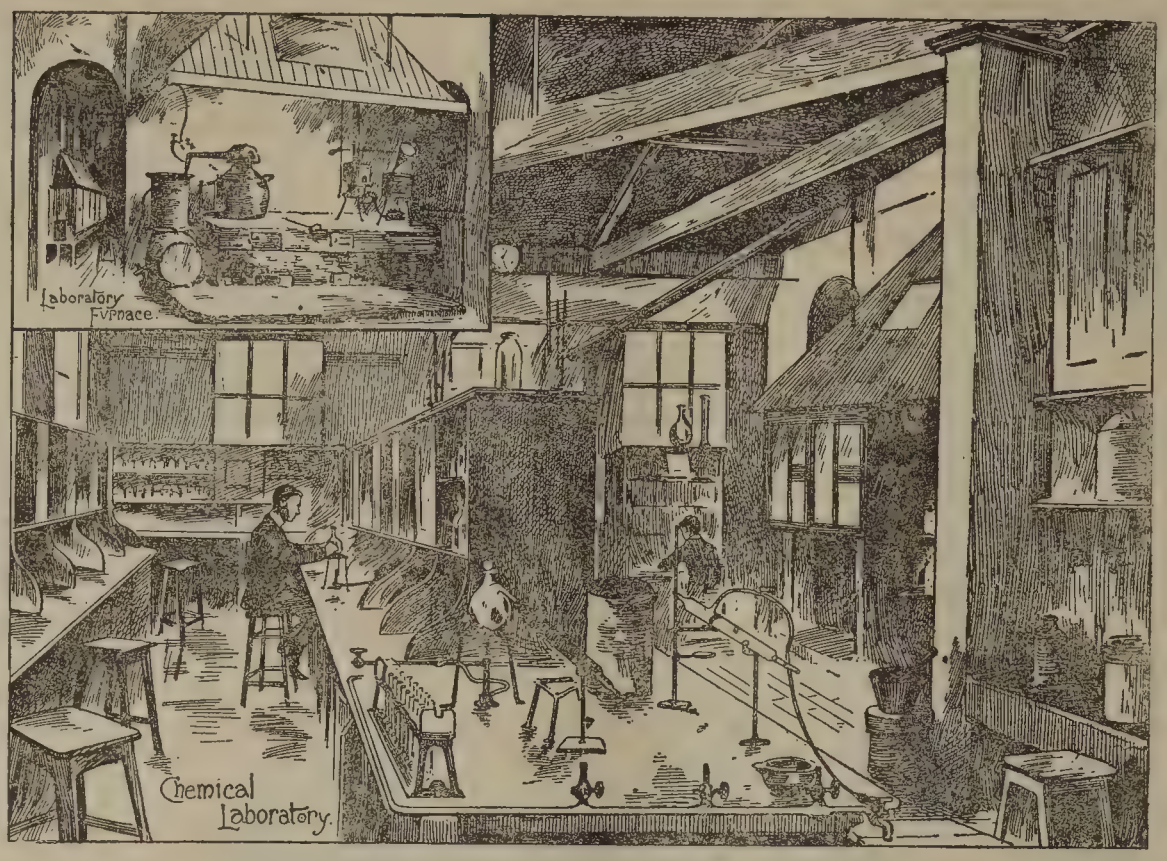
THE PHARMACEUTICAL SOCIETY'S HOUSE, LONDON.

At the end of the first session of the School the Council was able to report that forty pupils had attended the course on botany, seventy-one the course on chemistry, and seventy-nine the courses on materia medica and pharmacy, whilst the lecturers had reported "their entire satisfaction at the regularity and attention of the students, many of whom came from long distances." This successful result encouraged the Council to extend the courses of instruction, and arrangements were made for the delivery of forty lectures on botany by Dr. Thomson during the summer of 1843, and of fifty on chemistry, fifty on materia medica, and twenty-five on pharmacy during the following autumn and winter, the time necessary for this purpose being increased to three days a week in summer and four days a week in the autumn and winter.

The First Laboratory.

It was not found practicable to establish a laborator

for instruction in practical chemistry until 1844, and then only upon a limited scale, a back room on the second floor being fitted up with eight working benches. The experiment proved so successful, however, that it was decided to appropriate sufficient capital to fit up a laboratory capable of more satisfactorily accommodating those pupils who were daily engaged in acquiring practical instruction in pharmaceutical chemistry. The new laboratory was fitted up in the basement of No. 17, now occupied by the lecture hall. It was described at the time as being superior in size to any of the laboratories in Germany, including the celebrated one at Giessen, and also larger than most of those in France. More than this, Dr. Ure declared that "it was better provided with conveniences for conducting the various operations of a laboratory; there was a more convenient distribution and arrangement of apparatus, and it was better ventilated and provided with the means of getting rid of any injurious or offensive vapours, which often proved detrimental to the health of the students." In all these respects he said it certainly was the most compact and commodious laboratory that he had seen. Apparently, then, this laboratory, which was provided with benches for only eighteen students, was quite up to date in every respect and unequalled in Great Britain at the time. Meanwhile the Society's Library and Museum had been developing steadily, special attention being given to the requirements of students, so that the Society—within less than five years of its foundation — was maintaining a school as complete in every way, considering the needs of the time In this institution the good work of building up the professional side of pharmacy was steadily proceeded with, and the foresight of those who had so arranged matters was proved when, in 1852 and again in 1868, the Legislature recognised the principle that systematic education must constitute the basis upon which any professional privileges can be granted.



THE CHEMICAL LABORATORY—SCHOOL OF PHARMACY.

THE BEGINNING OF CHANGE.

In those early days the lectures were delivered in the room that afterwards became better known as an examination room, and is now the histological laboratory. Every inch of space in the premises at Bloomsbury Square was utilised to the best advantage, for the one house originally served for Council and Committee meetings, examinations, library, museum, Secretary's residence, etc., and it is easy to see that comparatively little space was available for the purposes of the School. But the receipt of a legacy of £2000 from Jacob Bell's estate, in 1860, enabled the Council to effect an important change, the precursor of numerous other changes that have culminated in the model School of Pharmacy of to-day. The laboratory in the basement had naturally proved a great nuisance, and the cause of continued annoyance to everyone in the other parts of the house, on account of escaping fumes, etc. Bell's legacy served both to obviate this inconvenience and to effect a permanent improvement, as it was applied for fitting

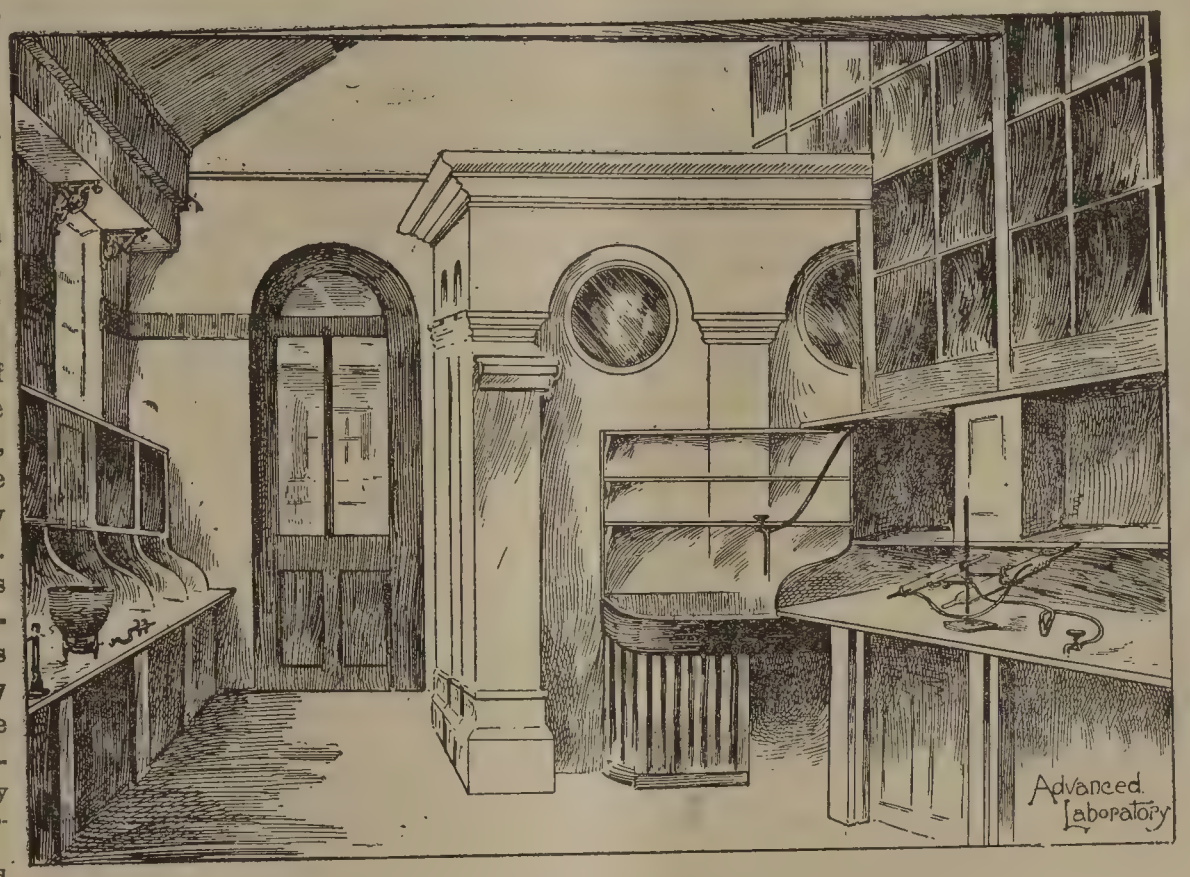
THE CHEMICAL LABORATORY—SCHOOL OF PHARMACY.

up the laboratories at the top of the house, which have continued as the training ground of hundreds and place of examination of thousands of students ever since. Dr. Attfield came upon the scene as director of these laboratories in 1862. Professor Redwood had added Fownes' duties to his own in 1846, and three years later Robert Bentley succeeded Dr. Thomson as Professor of Botany, while on the death of Dr. Pereira, in 1853, he became Professor of Botany and Materia Medica. The School staff was thus entirely reconstituted, and the chairs were filled for many years after by the following professors:—

Professor of Chemistry and Pharmacy. — Theophilus Redwood, Ph.D.

Professor of Botany and Materia Medica.—Robert Bentley, M.R.C.S., Eng.

Professor of Practical Chemistry .....John Attfield, Ph.D.



THE ADVANCED LABORATORY—SCHOOL OF PHARMACY.

The retirement of Redwood in 1886 and Bentley in 1887 led to further rearrangements. Mr. W. R. Dunstan became Professor of Chemistry; Mr. J. Reynolds Green, Professor of Botany; Mr. E. M. Holmes, the Curator of the Society's Museum, for a short period acted as Lecturer in Materia Medica, being succeeded by Mr. Henry G. Greenish, who was subsequently made Professor of the same subject, whilst pharmacy was in the hands of Mr. Joseph Ince as Lecturer. Thus, the staff during the past year, the last under the old arrangements, was as follows:—

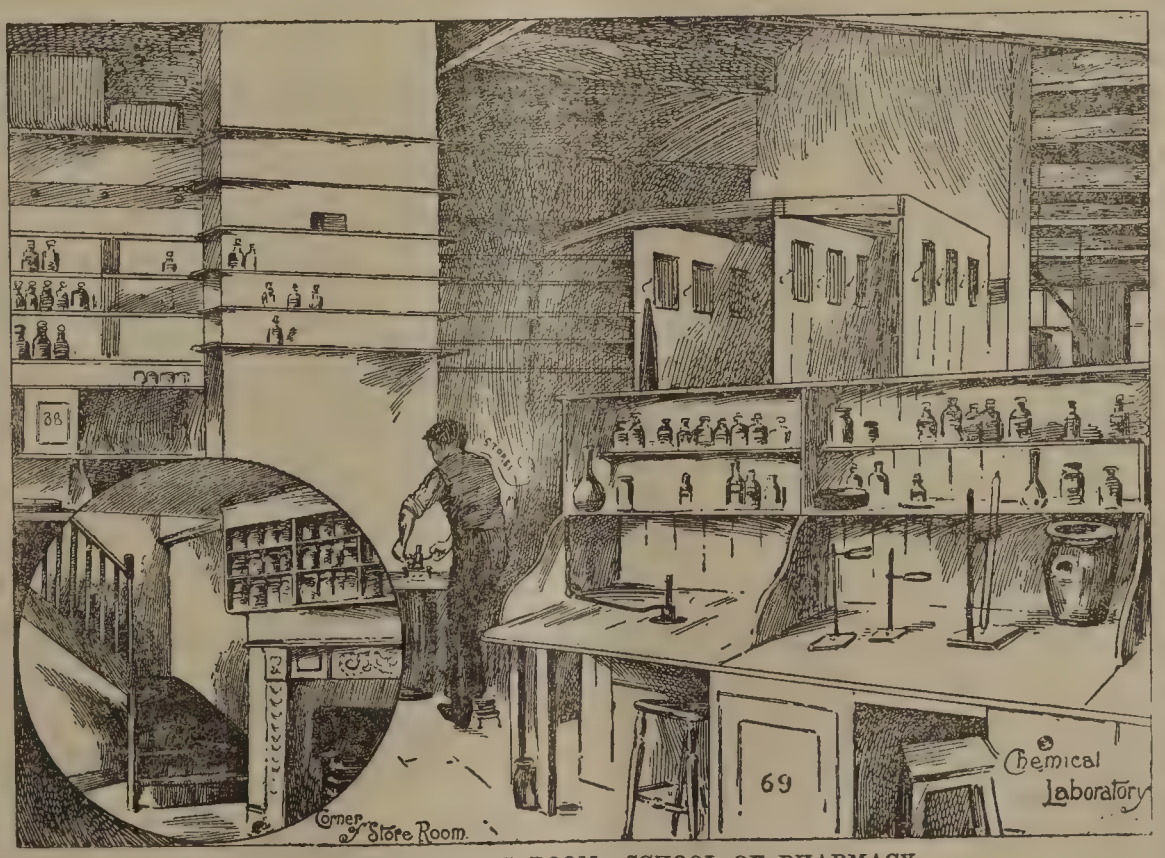
Professor of Practical Chemistry. — John Attfield, Ph.D., F.R.S., F.I.C.

Professor of Chemistry. —Wyndham R. Dunstan, M.A. Oxon., F.R.S., F.I.C.

Professor of Botany.—J. Reynolds Green, Sc.D., F.R.S., F.L.S.

Professor of Materia Medica.—Henry G. Greenish, F.I.C., F.L.S.

Lecturer in Pharmacy.—Joseph Ince, F.L.S.



THE GLASS-BLOWING ROOM—SCHOOL OF PHARMACY.

Change is the law of the Universe, however, and with the commencement of the fifty-fifth session of the School of Pharmacy, we are confronted by more extensive and far-reaching changes than have been effected simultaneously at any given time during its former career. The resignation of Professors Dunstan and Attfield, and of Mr. Ince, afforded the Council an exceptional opportunity for re-organising the School throughout. The result is that, only two members of the old teaching staff remain and one of those occupies a different position to that he held formerly, whilst all the assistant lecturers and demonstrators have been replaced. The new School staff is constituted as follows:—

Professor of Botany.—J. Reynolds Green, Sc.D., F.R.S., F.L.S.

Professor of Chemistry.—J. Norman Collie, Ph.D., F.R.S.

Professor of Materia Medica and Pharmacy.—Henry G. Greenish, F.I.C., F.L.S.

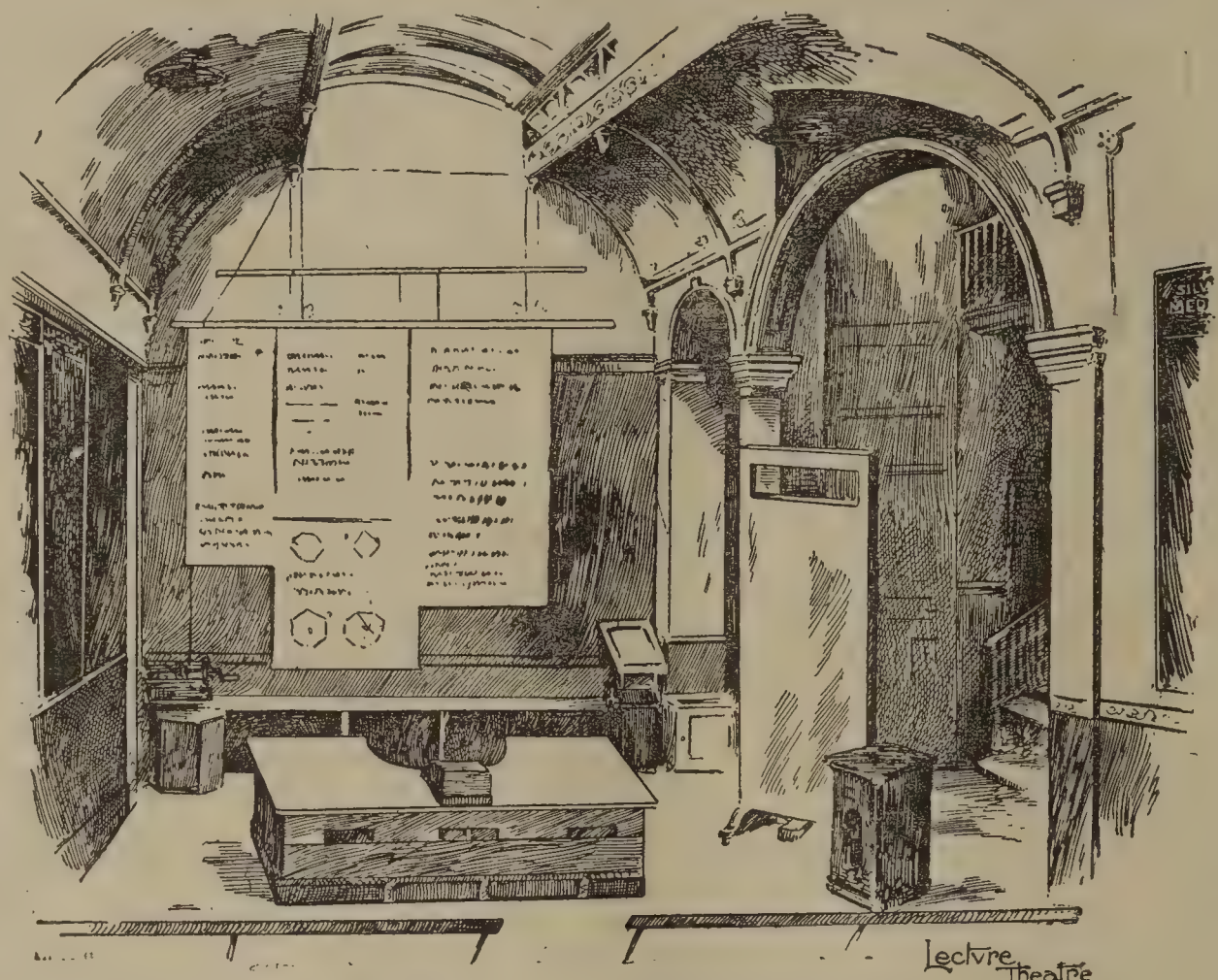
THE NEW STAFF.

At the time of his appointment, Professor Green held the degrees of B.Sc. (Lond.) and B.A. (Cantab.), as well as the Scholarship of Botany at Trinity College, Cambridge. He was also acting as demonstrator to the Professor of Physiology at Cambridge. Essentially a physiologist, prior to 1887 he had published some important papers giving the results of original work on the proteids, and during the past ten years he has continued to display marked activity in botanical research, one of his favourite subjects being the study of vegetable ferments. He received the degree of Sc.D.

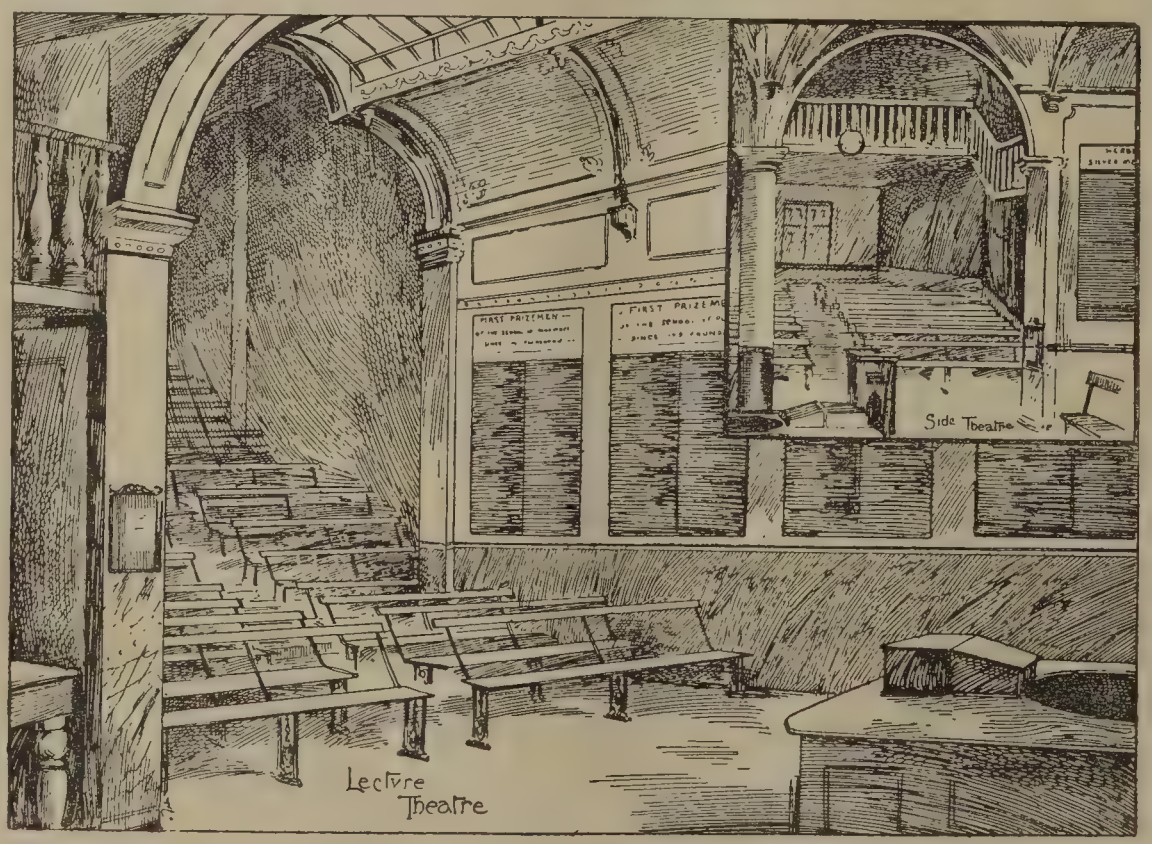
(Cantab.) in 1894, and, in recognition of his work, the F.R.S. was conferred upon him in 1895, whilst shortly afterwards was published his 'Manual of Botany,' based upon the old and time-worn "Bentley."

[PROFESSOR COLLIE received his education at Charterhouse School, Clifton College, and University College, Bristol. He won a scholarship, and after acting as assistant to Professor Letts in the last-named institution, and also at Queen's College, Belfast, he studied awhile under Professor Wislicenus at Würzburg University, where he took the degree of Ph.D. Subsequently, Dr. Collie acted as lecturer on chemistry at the Ladies' College, Cheltenham, as assistant to Professor Ramsay at University College, London, and as assistant-professor of chemistry at that institution. Helium and argon have naturally engaged much of his attention during the past twelve months, but his name has been associated with more than thirty important papers on chemical subjects published during the past eighteen years.

PROFESSOR GREENISH is the only member of the new School staff who has received the training of a practical pharmacist, and he also possesses the unique distinction of being the only British pharmacist who has enjoyed the advantages of a university training in his special subject — pharmacognosy. A Bell scholar in the School of Pharmacy in 1875, and the winner of no less than four silver medals during his school career, he subsequently acted as demonstrator in the chemical laboratories, and afterwards studied for some time in the University of Dorpat. There he devoted himself to the study of the histology of drugs in particular, and that of organic materia medica in general, thus fitting himself for the work devolving upon him when he was appointed Lecturer on Materia Medica in the School of Pharmacy in 1890, succeeding Mr. E. M. Holmes in that position. He was made Professor of the same subject three years later, whilst he now occupies the joint chair of Materia Medica and Pharmacy, and is Dean of the School. Professor Greenish is well known as the translator of Dragendorff's 'Plant Analysis,' and as the author of several valuable papers on the histology of drugs.



THE LECTURE TABLE—SCHOOL OF PHARMACY.



THE LECTURE THEATRE—SCHOOL OF PHARMACY.

THE NEW SYLLABUS.

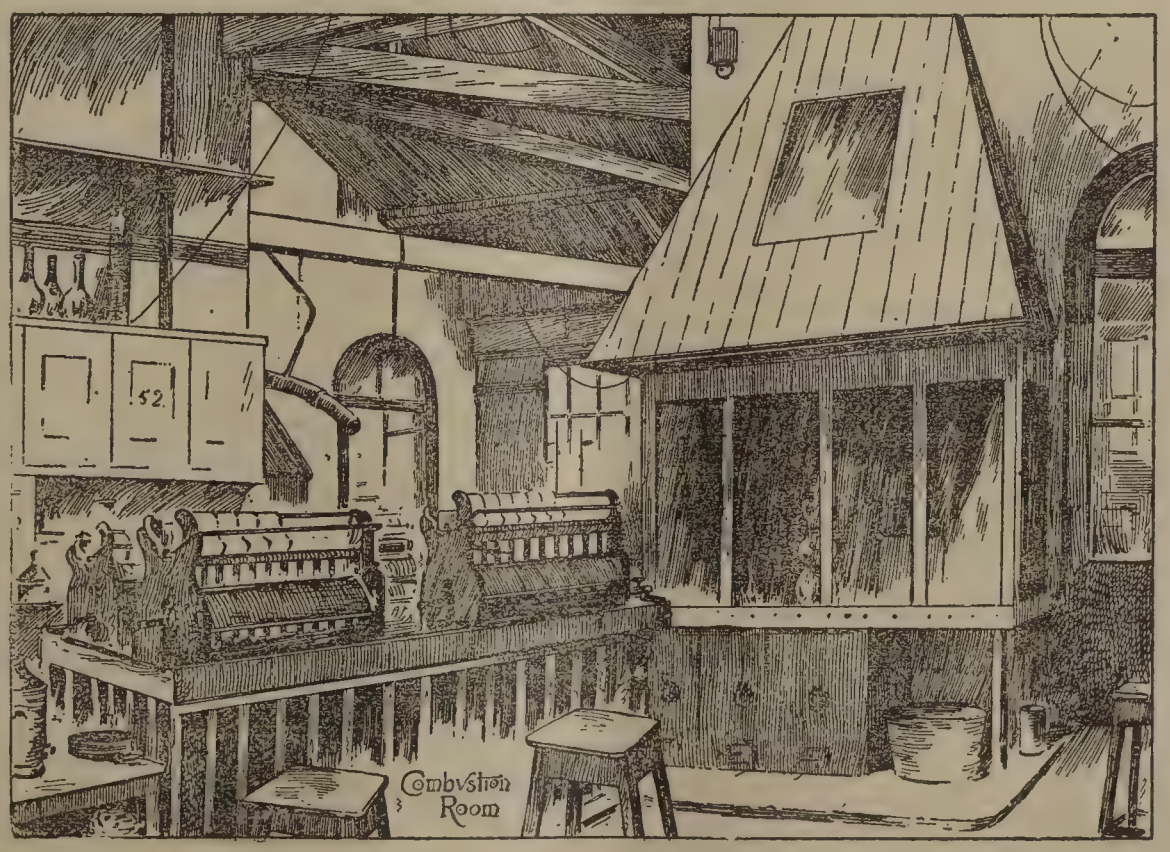
Reference to the new School syllabus shows that, whilst the teaching staff has been renewed, an equally important alteration has been made in the courses of study, in the direction of extending them over longer periods. Experience has proved that it is simply impossible to compress the school-work essential to the complete training of the modern pharmacist into the few months that have been heretofore considered sufficient for the purpose. The idea underlying the work of the School of Pharmacy since it first commenced operations has been to give a complete training in pharmacy, irrespective of examination requirements, and it has

been found that the realisation of this idea nowadays involves the devotion of more time to the work. Accordingly, whilst the courses of study remain unaltered as regards matter, the period of assimilation is to be prolonged. Thus, as will be seen on referring to the details on pages 228 to 231, the elementary course will extend from the beginning of October until the academical year ends in June, and it is hoped that students will devote the whole of this period to preparation for the Minor examination. Attendance during another session will thus be necessitated in the case of those desirous of proceeding to the Major examination, the extra preparation for which is extended from three to six months. The two courses of instruction will therefore be conducted by the School staff at the same time, and there will thus be two distinct sets of students working in the School side by side.

THE BALANCE ROOM—SCHOOL OF PHARMACY.

CHEMICAL LABORATORIES.

It has not been thought necessary as yet to make any important structural alterations in the premises, what changes there are being confined to the laboratories. Thus the chemical laboratories will be enlarged by the addition of what was formerly Professor Attfield's private laboratory, this room being reserved for advanced work, possibly including research work. This increase in the bench accommodation of the chemical laboratories will enable about seventy students to work together in the four rooms, views of which are given in this number of the Journal.



THE COMBUSTION ROOM—SCHOOL OF PHARMACY.

Directly connected with the laboratories is the balance room, which is also used for stores. This remains unaltered, and will probably meet all requirements for some time to come. The quaint staircase and old fireplace in this room, have been thought worthy of portrayal, the more especially as the halo of sanctity once pervaded the apartment when it served as the editorial sanctum of the *Pharmaceutical Journal*. In earlier days still this room formed part of the residence of George Walter Smith, the Society's first Secretary, and was the scene of some lively festive gatherings.

PHARMACY AND HISTOLOGICAL LABORATORIES.

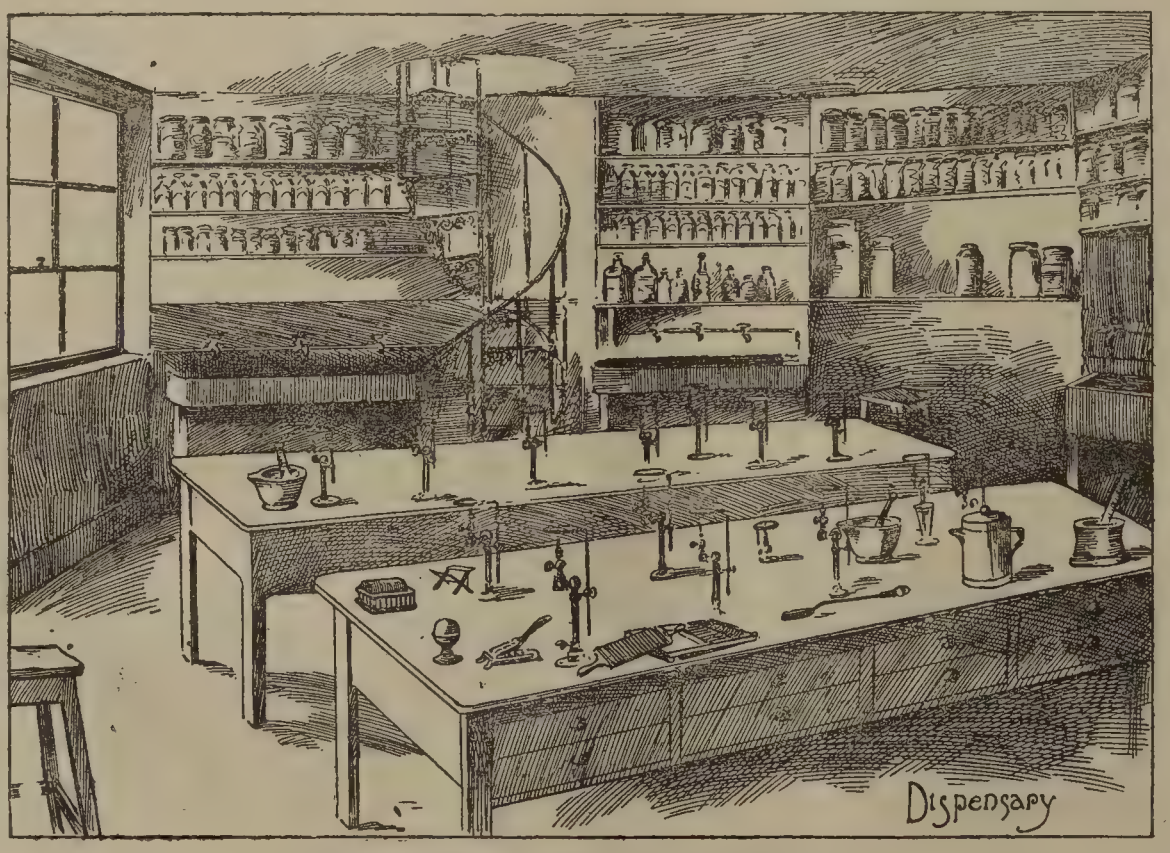
On the same floor as the chemical laboratories is the octagon room, to be known and used in future as the pharmacy laboratory. This has been re-arranged under the direction of Professor Greenish, as has also the room below, which has been converted into a dispensary. The two rooms communicate by a spiral staircase, so that practical classes can be conducted in both simultaneously. Each room affords comfortable accommodation for twenty students, gas being laid on to every bench, with a plentiful water supply. Next in order comes the histological laboratory, on the first floor. As already mentioned this room, which adjoins the library, was formerly used as a lecture and examination room. It is now fitted with benches and seats for forty students, the benches rising in tiers so as to equalise the supply of light. As at present arranged, the microscopical work in botany and pharmacognosy, conducted in this laboratory, is performed by daylight only.

The professor's bench in one corner of the room is near a window which overlooks the garden in Bloomsbury Square, and is the spot where much valuable research on crude drugs has been conducted.

THE LECTURE THEATRE.

The lecture theatre is well known to most, if not all, members of the Society as the place of assembly for annual meetings and evening meetings. Including the side theatre, it is capable of affording seating accommodation to an audience of more than two hundred, and here have sat several generations of British pharmacists, to listen to and criticise their leaders as the latter expounded the policy of the Council for the time being, or again to drink in scientific and technical knowledge as it has been skilfully dispensed in a fit state for ready assimilation by experts in pharmacy and the kindred sciences and arts. As the students sit where both young and old in the ranks of pharmacy have been wont to gain inspiration, they are surrounded by numerous relics of the original School laboratory and by tablets bearing the names of innumerable bygone worthies, who have distinguished themselves as prizemen in the School, and, later in their careers have conferred credit upon their *Alma Mater* by their success in the battle of life. Some of the proudest names in the world of applied science may be found inscribed upon those tablets, and there is little reason to doubt that the ranks of pharmacy may still be relied upon to act up to their old reputation as a fertile source of skilful experimenters and careful observers.

THE PHARMACY LABORATORY—SCHOOL OF PHARMACY.



THE DISPENSARY—SCHOOL OF PHARMACY.

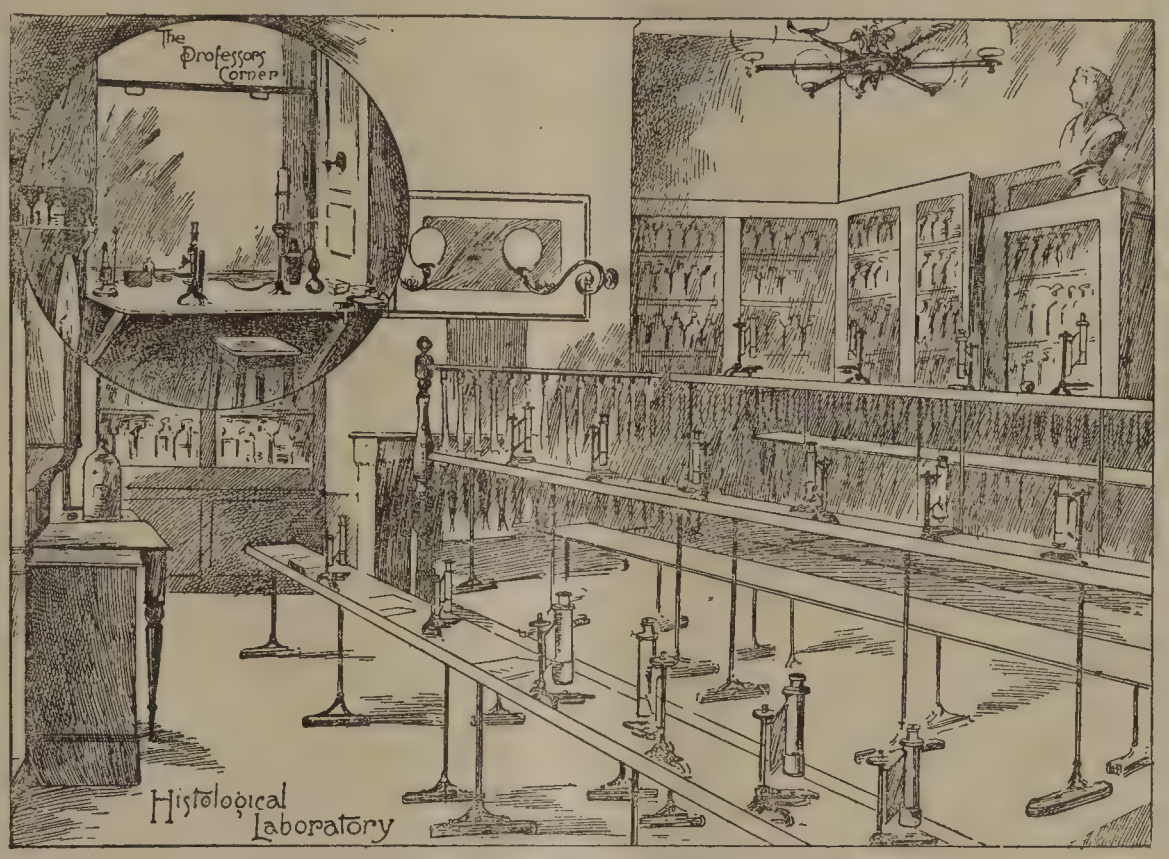
THE STUDENTS' MUSEUM.

The museum—one of the finest of its kind—can be but briefly referred to here, and only as a training ground for students. The department specially arranged for the use of budding pharmacists serves its purpose well, when once those who resort to it realise that knowledge of the macroscopic appearance of drugs cannot be gained by walking round the room, gazing for a few moments at some of the specimens in the cases, and then moving on again, repeating the process at irregular intervals, and continuing such peregrinations during the half-hour or more available for the purpose. Other objectionable methods of study (?) that have been observed are to sit down daily week after week, before the drawers of specimens upon the table and casually glance at the contents to see if they can be recognised, or to use knife and lens in a desultory fashion just before an examination, after calmly ignoring the existence of the museum as a place of study for months past. It has been proved by experience also that the museum is not the best place in the premises to use as a place of conversation upon topics of general rather than educational interest. But much serious and good work has been done here during a long course of years, and will yet continue to be done.

THE LIBRARY.

The nearest approach to a common room for the students is the library, but it is, of course, not available for many purposes to which a common room would be put. Early in

the day, however, during the session, numbers of students may be found in the recesses of the library or round the large centre tables, copying out notes, hunting up references, and slowly assimilating the mental pabulum administered to them during the lecture hour. In the inner library advanced students may be observed coaching beginners, whilst even the inner sanctuary — the old Council chamber, now the repository of the Hanbury Library—is invaded at times, despite the efforts of the patient and long-suffering librarian to preserve its holy calm. The collection of books in the library is probably unsurpassed as a means of reference for pharmacists, all new works of real utility being promptly added to those on the shelves, whilst the only valid complaint on the part of those who constantly resort to this store-house of valuable information to unearth its buried treasures, is that, owing to the rapid increase in the number of books and their consequent rearrangement on the shelves, the Cerberus in charge has rendered himself indispensable.



THE HISTOLOGICAL LABORATORY—SCHOOL OF PHARMACY.

A HISTORY OF THE SCHOOL NEEDED.

Of the Research Laboratory, now temporarily eclipsed by the departure of all the workers, of the examination rooms, and of the various organisations that perennially flourish amongst the students it is not proposed to say anything on this occasion, as lack of space forbids. It may be permitted, however, before closing this brief sketch, to point out that the history of the School of Pharmacy yet remains to be written. An attempt to produce such a history would be surrounded with many difficulties, and in all probability the result would be far from satisfactory to the compiler. But it is worth considering, before many more of the early students of the School pass away into the Silent Land, whether something cannot be done towards realising this project. If a number of those who have been connected with the School during the past half century, and yet survive, would jot down their experiences and despatch them to the Editor of this Journal, the work would be at least half done, and if it were done quickly the compilation and finishing touches need not be long delayed. Finished articles are not required, but brief notes jotted down as they may occur, and dealing with any and every aspect of the subject—teachers, students, class work, etc.

In fact, what seems to be required is a collection of personal reminiscences from as many former students and members of the teaching staff as can possibly be induced to exert themselves to the slight extent necessary. Lack of literary ability need not act as a drawback, for the information that is required can best be conveyed in the form of letters such as might be sent to familiar friends, and this is not beyond the ability of anyone. A careful and appreciative compilation of such notes, together with facts gleaned from any permanent records that may exist, should then fairly represent the progress of the School from its earliest days to the present time. How many will act upon this suggestion and lend their assistance, however slight, in the production of so worthy a memoir of the wisdom and sagacity of our Founders?

THE STUDENTS' MUSEUM, BLOOMSBURY SQUARE.

WHERE TO STUDY.

Educational Institutions in England

LONDON SCHOOLS.

The School of Pharmacy.

Professors.

Botany.—J. Reynolds Green, Sc.D., F.R.S., F.L.S.
Chemistry.—J. Norman Collie, Ph.D., F.R.S.
Materia Medica and Pharmacy.—H. G. Greenish, F.I.C., F.L.S.
Dean of the School.—Professor H. G. Greenish, F.I.C., F.L.S.

The Fifty-fifth Session, 1896-1897, will commence on Monday, October 5th, 1896, when the prizes of the last session will be distributed by the President at 3 p.m. An Inaugural Address to the students will afterwards be given by R. Brudenell Carter, Esq., F.R.C.S., Member of the General Medical Council, and Member of the Pharmacopœia Committee of the Medical Council.

All students and their friends are invited to be present.

After the proceedings all the departments of the School will be open for the inspection of visitors.

Applications for information respecting the School should be addressed to the Dean, Professor Greenish, 17, Bloomsbury Square, London, W.C. The Dean will attend at the School on the opening day to receive students and furnish information relating to the courses of study. The Professor of Botany and Professor of Chemistry will also be present to advise students with reference to their special subjects.

Applications for prospectuses and for admission to the School should be made to the Secretary and Registrar of the Pharmaceutical Society, 17, Bloomsbury Square, London, W.C., who will enter the names of students, receive fees, and issue cards of admission. The benches in the chemical and pharmaceutical laboratories will be allotted in the order in which they are applied for.

Two courses of study are given, an elementary and an advanced course. During the elementary course the student is expected to give his attention to the subjects included in the schedule for the Minor or Qualifying examination of the Pharmaceutical Society. The courses of lectures and laboratory instruction in each subject commence in October, and, with the exception of a short break at Christmas and Easter, are continued to the end of June. A student who works diligently during the course is expected to be ready to pass his Minor examination in July.

In the advanced course the instruction includes the subject-matter of the schedule for the Major examination of the Pharmaceutical Society. Lectures and laboratory work in chemistry, physics, botany and materia medica, commence in October, and are continued to the end of March. Students attending these courses are expected to be ready to pass the Major examination in April.

Botany Syllabus.

Professor J. Reynolds Green, Sc.D., F.R.S., F.L.S.

The elementary course will extend from October 9, 1896, to the end of June, 1897. The lectures will be delivered on Fridays and Saturdays at half-past 9 o'clock. The laboratory work will be held at the conclusion of the lectures on Saturday mornings, and will be conducted by the demonstrator under the supervision of the Professor.

At the end of June a bronze medal and two certificates of honour are offered for competition by students who have attended the elementary course.

HENRY C. GREENISH (DEAN).
Professor of Materia Medica and Pharmacy.

J. NORMAN COLLIE, PH.D.
Professor of Chemistry.

J. REYNOLDS GREEN, SC.D.
Professor of Botany.

THE PROFESSIONAL STAFF—SCHOOL OF PHARMACY.

At the end of March a silver medal and two certificates of honour are open for competition by students who have attended the advanced course.

The advanced course will extend from October to the end of March, 1897. From October to December lectures will be delivered on Fridays and Saturdays at 12 o'clock, and from January to March on Fridays only, at the same hour. The laboratory work will be held on Friday mornings from half-past 9 till 12, and will be conducted by the demonstrator under the direction of the Professor.

The laboratory work in connection with both courses will be so arranged as to illustrate and supplement the lectures. It will include the dissection of plants and the practical study of their morphology; their histological features, the study of their structure by means of the microscope, the preparation and appropriate treatment of sections, and the methods of investigation; the practical study of the chief physiological processes; the features of the more important natural orders and the mode of representing them by means of diagrams and formulæ. It will include also the revision of the subject matter of the lectures.

The Gardens of the Royal Botanic Society, Regent's Park, will be open for purposes of study to all students of the School. Orders of admission will be issued on the recommendation of the Professor.

These lectures are also adapted for students who intend to proceed to a degree in Science at the University of London.

CHEMISTRY SYLLABUS.

Including Physics in their relation to Chemistry.

Professor J. Norman Collie, Ph.D., F.R.S.

Assistant Lecturer—A. Lapworth, D.Sc. London.

The lectures on elementary chemistry are delivered by the Professor on Tuesday and Wednesday, and those on physics by the assistant lecturer on Monday mornings at half-past 9 o'clock. The lectures on advanced chemistry will be on Monday and Tuesday at 12 o'clock, and those on physics by the assistant lecturer on Thursday at 12 o'clock. The elementary course, which commences in October and terminates at the end of June, has reference to the principles of chemistry as illustrated by the properties of the non-metals and metals; special attention being paid to those which are of importance in medicine and the arts. It also includes a consideration of the elements of organic chemistry, and of heat, besides those other parts of physics which are closely related to chemistry. The advanced course, which is more particularly intended for advanced students, commences in October, and terminates at the end of March. It includes lectures on the atomic theory and the determination of atomic weights, organic chemistry, and also lectures and demonstrations in light, electricity, and magnetism. All the lectures are fully illustrated by experiments. Revision classes will be held from time to time, as required. The lectures on physics will include practical demonstrations in the use of physical instruments.

At the end of June a bronze medal and two certificates of honour are offered for competition by students who have attended the elementary course.

At the end of March a silver medal and two certificates of honour are open for competition by students who have attended the advanced course.

Elementary students are strongly recommended to enter in October; but in the case of a student who is unable to commence work in October, and is obliged to enter at a later date, the Professor will be glad to render him every assistance in supervising his work in those portions of the subject which have already been discussed in the preceding lectures.

PRACTICAL CHEMISTRY SYLLABUS.

Professor J. Norman Collie, Ph.D., F.R.S.

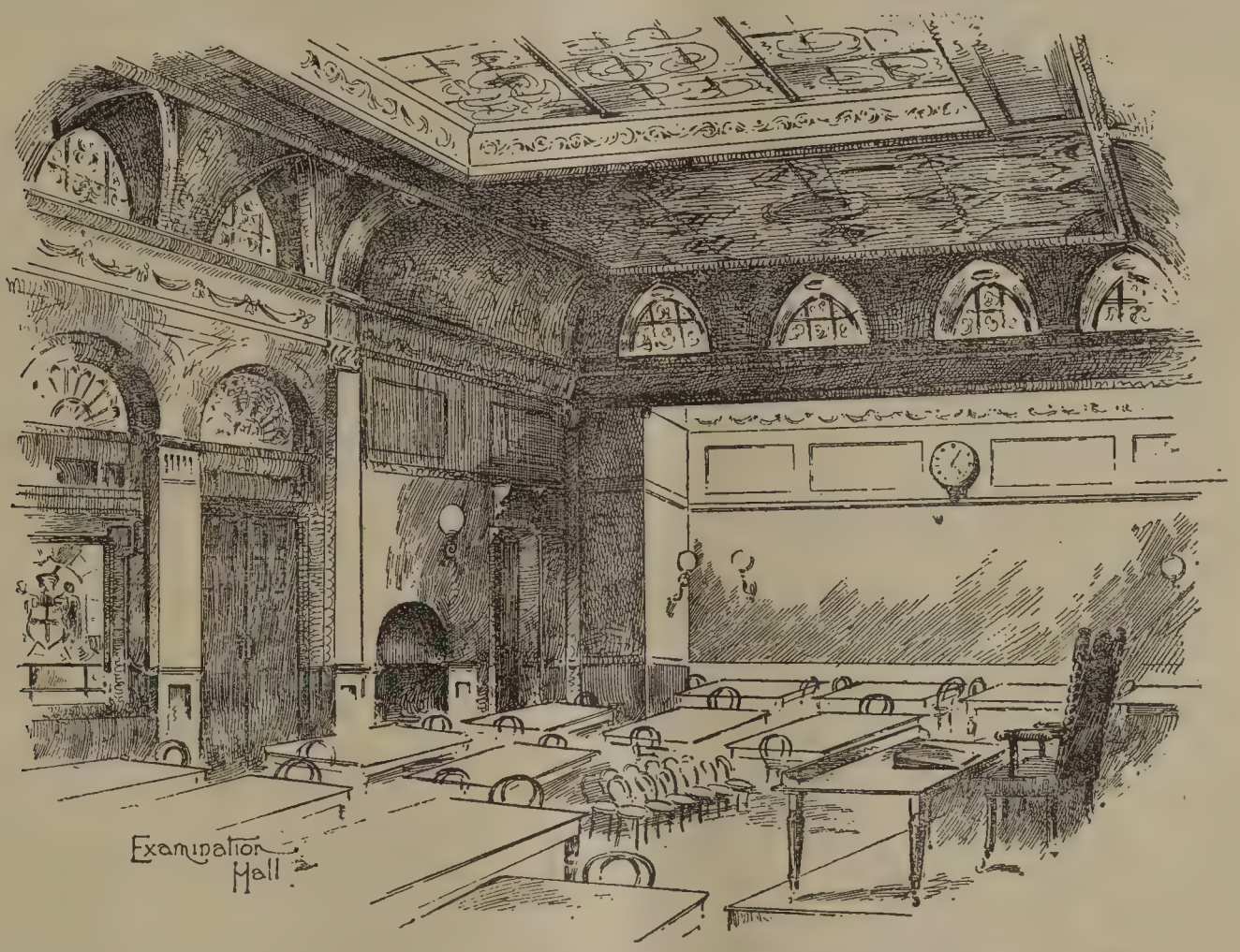
Senior Demonstrator.—A. Lapworth, D.Sc. London.

The chemical laboratories will re-open on Monday, October 5, and will be available for practical work from nine a.m. until five p.m. daily. On Saturdays they are closed at two o'clock.

These laboratories are fitted up with every convenience for the study of the principles of chemistry by personal experiment. They are specially designed for the student of pharmacy, but are equally well adapted for the acquirement of a knowledge of chemistry in its applications to medicine, manufactures, or analysis. A complete elementary course of instruction occupies about nine months, students working not less than three hours daily; a complete advanced course including the higher branches of quantitative analysis, occupies about six months.

On the entry of a student a working bench is allotted. The Professor then personally recommends such a course of instruction as appears most appropriate. Apparatus having been obtained, work commences. Additional aid should freely be sought from the Professor or a demonstrator, when they are visiting each pupil (morning and afternoon) or when seated at their desks. Full notes of every day's work should be made.

The advanced course includes a more detailed synthetical and analytical study of the non-metallic and metallic elements and their compounds, a fuller treatment of organic chemistry, including the important carbohydrates, glucosides and alkaloids, more extended work at volumetric analysis, gas analysis, and a course in gravimetric analysis—organic and inorganic.



THE PHARMACEUTICAL EXAMINATION HALL, BLOOMSBURY SQUARE.

At the end of June a bronze medal and two certificates of honour are offered for competition by students who have attended the elementary course.

At the end of March a silver medal and two certificates of honour are offered for competition by students who have attended the advanced course.

APPARATUS.—Each student is provided with certain apparatus, fuel, chemical substances, etc., and his working bench is fitted with lock-up cupboards, in which to place the articles lent to him, as well as those purchased by himself, which will cost about 25*s*.

Students must also obtain small quantities of nitrate of silver (about ¼ oz.), perchloride of platinum (about ½ drachm); any alcohol, ether, and chloroform that may be required a sponge, two towels, and a note-book.

Some other articles, such as flasks, retorts, receivers, condensers, large evaporating basins, water baths, apparatus for volumetric and gravimetric quantitative analyses, etc., are specially provided for those operations in which they are required. The student is held responsible for all articles lent to him, and is expected to return them sound and properly cleansed.

Microscopes, spectroscopes, etc., are used under the supervision of the Professor or a demonstrator.

With a view of testing and maintaining the progress of students, the Professor holds weekly examinations. He requires all pupils to attend these classes.

Each student is expected to keep his bench and the apparatus supplied to him clean and in working order; to leave them in that state at the close of the day; to make use of the means provided for carrying off noxious gases and vapours, and to avoid waste in the use of gas and chemical substances. Only operations sanctioned by the Professor may be performed.

MATERIA MEDICA SYLLABUS.

Professor Henry G. Greenish, F.I.C., F.L.S.
Demonstrator.—Harold Wilson.

The elementary course of lectures in this subject will be delivered on Thursdays at half-past 9 o'clock, commencing on October 8, and extending to the end of June. Each lecture will be followed by practical work in the laboratory, which will be conducted by the demonstrator under the immediate personal supervision of the Professor.

The advanced course of lectures will be delivered on Wednesdays at half-past 9 o'clock, commencing on October 7, and terminating at the end of March. These lectures also will be followed by practical laboratory work.

At the end of June a bronze medal and two certificates of honour are offered for competition by students who have attended the elementary course.

At the end of March a silver medal and two certificates of honour are offered for competition by students who have attended the advanced course.

The silver medallists are presented by Mr. Thomas Hanbury with a copy of 'Pharmacographia' and of 'Science Papers,' in memory of his brother, the late Daniel Hanbury, F.R.S.

The elementary course will include the description of all important drugs. The physical and diagnostic characters of each will be carefully described, the geographical, botanical, and commercial sources indicated, the more important active principles enumerated, and the mode of collection and preparation for the market described in detail.

The advanced course will include instruction in the examination of the principal starches, of kamala, lupulin, lycopodium, etc., as well as in the preparation, examination, and description of sections of typical examples selected from the official leaves, woods, barks, stems, rhizomes, roots, seeds, fruits and flowers. The methods usually adopted for separating the component tissues and elements will be described and practised, and the student thus afforded instruction in the complete histological examination of vegetable drugs. The chief diagnostic characters of all the more important, especially toxic, drugs will be pointed out, and the means by which the drug may be recognised in the form of powder detailed and practised. Instruction will also be afforded in the investigation of powdered drugs, and illustrated by the practical examination of certain drugs commonly purchased by the pharmacist in the form of powder.

PHARMACY SYLLABUS.

Professor Henry G. Greenish, F.I.C., F.L.S.
Demonstrator.—Harold Wilson.

The lectures on pharmacy will be delivered on Mondays and Tuesdays at half-past 2 p.m., commencing on October 6, and extending to the end of June. Each lecture will be followed by about two hours' practical work in the pharmaceutical laboratory.

At the end of June a silver medal is offered for competition by students who have attended the course of pharmacy.

The subject matter will be divided into pharmacy and dispensing. The first of these divisions will include lectures on, and practical instruction in, the performance of all pharmaceutical operations, such as evaporation, distillation, sublimation, calcination, fusion, desiccation, disintegration, solution, dialysis, crystallisation, granulation, precipitation, decantation, filtration, clarification, infusion, digestion, decoction, maceration, percolation, and expression, as well as in the production of all classes of galenical preparations, such as medicated waters, dilute acids, collodions, confections, etc.

Under dispensing will be included practice in the reading of prescriptions, the detection of errors and unusual doses, and systematic instruction in the weighing, measuring, compounding, and finishing off of medicines. All operations that can be performed at the dispensing counter, such as the various methods of coating pills, filling capsules, preparing tablets and tablet triturates, lozenges, suppositories, bougies, etc., will be practised by the student, who will thus be afforded an opportunity of acquiring a sound knowledge of this branch of his business.

During the course of instruction in pharmacy and dispensing modern appliances for the pharmaceutical laboratory and the dispensing counter will be described, and, if possible, practically used, special attention being directed to such apparatus as the retail pharmacist may advantageously employ in the daily routine of his calling.

All laboratory work will be conducted under the immediate personal supervision of the Professor.

CLASS FEES.

The following are the class fees:—

ELEMENTARY COURSE.
October to end of June.

	£ s. d.	£ s. d.
Chemistry—		
Practical—three hours daily	12 12 0	
Lectures	5 5 0	
		17 17 0
Botany—		
Lectures (including practical work)		5 5 0
Materia Medica—		
Lectures (including practical work)		3 3 0
Pharmacy—		
Course (including practical work)		6 6 0
		£32 11 0

Or an inclusive fee of £30.

ADVANCED COURSE.
October to end of March.

	£ s. d.	£ s. d.
Chemistry—		
Practical—three hours daily	9 9 0	
Lectures—Chemistry and Physics	3 3 0	
		12 12 0
Botany—		
Lectures (including practical work)		3 3 0
Materia Medica—		
Lectures (including practical work)		3 3 0
		£18 18 0

Or an inclusive fee of £18.

PRACTICAL CHEMISTRY.
Special Fees.

Whole day in Laboratory	£4 4 0	per month.
For three months or more	3 3 0	,, ,,

Each student in practical chemistry is required to deposit ten shillings for breakages, etc.

TEXT BOOKS RECOMMENDED.

The following books are recommended for general reference:—

Attfield's 'Chemistry' (Gurney and Jackson), 15*s.*
British Pharmacopœia (Spottiswoode and Co.), 6*s.*
Flückiger and Hanbury's 'Pharmacographia' (Macmillan), 21*s.*
Bloxam's 'Chemistry,' 8th edition, 1895 (Churchill), 18*s.* 6*d.* or Ramsay's 'Elementary Systematic Chemistry' (Churchill), 4*s.* 6*d.*
Ganot's 'Physics' (Longmans), 15*s.*, or Everett's 'Physics' (Blackie), 3*s.* 6*d.*
Green's 'Manual of Botany,' vols. 1 and 2 (Churchill).
Ince's 'Latin Grammar of Pharmacy' (Baillière), 5*s.*
Maisch's 'Organic Materia Medica' (Kimpton), 10*s.* 6d.
Pereira's 'Selecta è Prescriptis' (Churchill), 5*s.*
Proctor's 'Lectures on Practical Pharmacy' (Churchill), 14*s.*
Remsen's 'Organic Chemistry' (Macmillan), 6*s.* 6*d.*, or Bernthsen's 'Organic Chemistry' (Blackie), 7*s.* 6*d.*
Scott, D. H., 'An Introduction to Structural Botany' (A. and C. Black), 3*s.* 6d.

LIBRARY, READING ROOM, AND MUSEUMS.

The Society's Library, which contains a complete collection of books of reference and text books on all branches of knowledge allied to pharmacy, with its excellent reading rooms, is open to all students subscribing to the Society.

The Society's Museum of materia medica, which is also available to such students, contains one of the finest collections of vegetable materia medica.

Students not eligible to become subscribing students of the Society should apply to the Secretary of the Pharmaceutical Society for permission to use the Library or Museum.

CERTIFICATES OF ATTENDANCE, AND PRIZES.

Certificates of attendance at the courses of chemistry, practical chemistry, botany, materia medica and pharmacy, are given to all students who are regular in their attendance, and do their work to the satisfaction of the Professor.

Certificates of attendance at the two courses of lectures on chemistry and at the chemical laboratories are accepted as evidence of chemical training by the Institute of Chemistry in connection with the examinations for the Associateship, and also by the Conjoint Board of the Royal Colleges of Physicians and Surgeons, as well as by other examining bodies.

Certificates of attendance at the courses of pharmacy also are accepted by the Conjoint Board.

Medals and prize certificates are awarded partly on the results of the class examinations and partly on those of the revision classes in each subject, which are held periodically. They can only be taken by students who subscribe to the Society, and who have attended at least three-fourths of the course immediately preceding the competition.

South London School of Pharmacy, Limited,

325, *Kennington Road, London, S.E.*

STAFF.—Dr. Muter, F.R.S. (Edin.), F.I.C., etc.; Mr. W. H. Dodd, F.C.S., etc.; Mr. W. F. Mawer, F.C.S. (and Lond. Univ.); Mr. F. Armstrong; Mr. L. De Koningh, F.I.C., etc.; Mr. J. Thomas, B.Sc. (Lond.), First Class Honours in Chem. and Physics; and Mr. A. C. M. Muter, A.I.C.

This school was established in 1868, and is therefore the oldest school of pharmacy now existing outside the Pharmaceutical Society, whilst its past students are to be found everywhere occupying the highest positions, not only in business and in the scientific world, but also on the Council and Board of Examiners of the Pharmaceutical Society.

The school premises include a chemical laboratory, fully fitted for both quantitative and qualitative analysis; a very complete museum of drugs, chemicals, and plants; and a laboratory for the manufacture of pharmaceutical preparations, fully fitted with all the necessary technical fittings, such as stills, steam-pans, etc., so that students can practically manufacture the preparations of the Pharmacopœia, and gain knowledge not hitherto attainable outside the laboratory of a manufacturer. In this department is also a fully-furnished dispensary where students can obtain thorough practice in the art of dispensing in all its branches. There are also rooms specially furnished with microscopes and all appliances for practical biology; and also with full sets of electrical, optical, and thermal instruments. The lecture rooms, etc., are in a separate building from the laboratories, so as to be free from fumes.

I.—Theoretical Lectures and Tutorial Classes.

MINOR:—Lectures and classes in chemistry, chemical physics, botany, materia medica, Latin, and pharmacy, perpetual fee £5 5 0

MAJOR:—Lectures and classes in organic chemistry, physics, botany, and materia medica, perpetual fee £3 3 0

No ordinary student can attend the theoretical classes without also taking the practical work.

II.—Practical Department.

MINOR DIVISION:—Qualitative and volumetric analysis, elementary organic analysis, practical hydrostatics, practical manufacturing pharmacy and dispensing, and practical vegetable histology and pharmacognosy, per month £3 3 0

MAJOR DIVISION:—Advanced qualitative and quantitative analysis, both inorganic and organic, analysis of drugs, water, food, urine, etc., practical vegetable histology, and microscopic examination of drugs, per month £3 3 0

A special extra academical tutorial term, open only to students of the school, is formed annually in August for the October examination, fee £4 4*s.* for either Minor or Major.

III.—Compounding Fees.

Every necessary subject either for Minor or Major (theoretical and practical):—

For the first term (about 3½ months), twelve guineas.

For a second, or any subsequent term, eight guineas.

Students having once "compounded" can remain in the school as long as they please, on payment of the practical fees only.

The laboratories open at 9 a.m., and classes go on at intervals all day until 6 p.m., except between 1.30 and 2.30 p.m., when there is an interval. Work ceases at 1 p.m. on Saturdays. The session lasts from the end of September in each year until the middle of July in the following year. A fresh course of lectures (commencing at the foundation of each subject) is begun in September, January, and April.

British Institute of Preventive Medicine.

101, *Gt. Russell Street, W.C.*

STAFF.—*Bacteriological Departments*: Allan MacFadyen, M.D., B.Sc.; R. T. Hewlett, M.D., M.R.C.P.; A. G. R. Foulerton, F.R.C.S., D.P.H. (Camb.). *Antitoxin Department*: W. Bulloch, M.D.; W. St. Clair-Symmers, M.D. *Water Laboratory*: Joseph Lunt, B.Sc., F.C.S. The winter session commences on October 1, and the summer session on May 1. The laboratories are open daily from ten to five o'clock for the purpose of instruction and original research work. The work is under the supervision of Allan MacFadyen, M.D., B.Sc., assisted in the bacteriological department by R. T. Hewlett, M.D., M.R.C.P., and in the chemical department by Mr. A. G. R. Foulerton, F.R.C.S., D.P.H. Camb.

BACTERIOLOGICAL DEPARTMENT.

1.—*Bacteriology in Relation to Medicine and Pathology.*

The general course includes a practical study of the morphology and biology of the moulds, yeasts, schizomycetes, and protozoa; the methods of isolation, cultivation, and staining of bacteria; the examination of tissues, etc.

The pathogenic bacteria are studied in detail, as well as the methods of proving their casual relation to disease; their detection in the tissues and secretions of the body; and the bacteriological methods of clinical diagnosis are demonstrated.

The advanced student is given the opportunity of systematically studying important types of organisms, pathogenic and non-pathogenic; the preparation of cultures; embedding and cutting tissues in gum, celloidin, and paraffin; the examination of the blood in disease; Ehrlich's staining methods, etc. Microscopes and reagents are supplied, and the fee for a course is £5 5*s.*

2.—*Bacteriology in Relation to Hygiene.*

This course is specially intended for health officers and students of hygiene. The work includes the bacteriological examination of water, soil, and air; the study of diseases common to man and the lower animals; the diagnosis of tuberculosis, cholera, diphtheria, and typhoid fever; the consideration of food as a source of infection; the testing of disinfections and filters, etc. Fee for the course, £5 5*s.*

3.—*Biological Chemistry.*

This course is adapted to advanced students who possess the time and necessary qualifications for work of this nature. The course begins with a study of the more important methods of physiological chemistry, viz., the separation of the products of digestion, the analysis of milk, urine, etc. The special work includes the detection and isolation of the decomposition products of carbohydrates and proteids; basic bodies; bacterial toxins (tetanus, diphtheria); bacterial proteins (tuberculin, mallein); enzymes. Demonstrations are also given in illustration of chemiotaxis, phagocytosis, the standardising of antitoxins, and the methods of producing immunity. Fee for the full course, £12 12*s.*

4.—*Original Work.*

The members of the staff will afford every facility to those wishing to prosecute original investigations.

HYGIENE DEPARTMENT.

A practical laboratory course, illustrating the principles of hygiene, is given during the Winter and Summer Sessions. The course is intended for health officers, students of hygiene, and those intending to prosecute investigations in preventive medicine. The work includes all the laboratory instruction in bacteriorology and chemistry necessary for the Diploma in Public Health, and arrangements have been made for practical out-door instruction with a Medical Officer of Health. The laboratory is primarily intended to further research work in the field of preventive medicine, and help will be given to those wishing to carry out original investigations, or to follow out the methods employed in the German State Laboratories. Fees:—Six months' course, £15 15*s*; three months' course, £10 10*s.*

Clinical Investigation Department.

Medical men are received in this department for practical instruction by the members of the staff in the bacteriological and chemical methods employed in the diagnosis of disease. The Institute, with a view of assisting medical men, is prepared to carry out a chemical, bacteriological, or pathological examination of any material sent, and to report upon the same. A fee will be charged sufficient to cover the expenses of the investigation.

Bacteriology of Fermentation.

The increasing importance of bacteriology in relation to technical industries and agriculture has led to the provision of special instruction, suitable to chemists and analysts. The laboratory is provided with pure cultivations of typical yeasts, kindly supplied by Professor Hansen, of Copenhagen. Instruction is given in the bacteriology of fermentation, nitrification, etc., and facilities afforded for research. The examination of material is also undertaken by the members of the staff, and advice given on the above subjects.

Water Laboratory.

The water laboratory of the Institute is fully equipped with all the means for conducting a bacteriological and chemical examination of samples of water, and is in charge of Mr. Joseph Lunt, B.Sc., F.C.S., Chemist to the Water Laboratory.

Photomicrography.

Mr. J. E. Barnard, photographer to the bacteriological department, is prepared to give instruction in this branch of work to students of the Institute and to medical men. The course deals with the subject both theoretically and practically. Further particulars of the courses will be sent on application to Allan MacFadyen, M.D., B.Sc., Hon. Sec.

Westminster College of Chemistry and Pharmacy.

Trinity Square, Borough, London, S.E.

Principals.—Mr. G. S. V. Wills, F.L.S., M.P.S., and Mr. H. Wootton, B.Sc. (Lond.). Secretary: Mr. E. Walden.

Day Classes are held in chemistry and physics, materia medica, botany, pharmacy, and dispensing. The college is open from 10 to 5 daily (Saturdays, 9.30 to 12.30), and the time not devoted to lectures and tutorial classes is occupied in practical work in the various subjects.

Fees.—Minor course: Three months, £8 8*s.*; six months, £12 12*s.*; twelve months, £15 15*s.* Major course: Three months, £5 5*s.*; twelve months, £10 10*s.* Students who take a six months' course and pass the Minor at their first attempt, receive free tuition for the Major.

Evening Classes are held every Tuesday, Wednesday, and Thursday from 7 till 9. The fees are:—Minor course: Three months, £1 1*s.*; six months, £1 11*s.* 6*d.*; and twelve months, £2 12*s.* 6*d.* Major course: Three months, £1 11*s.* 6*d.*; six months, £2 12*s.* 6*d.*; twelve months, £4 4*s.*

Metropolitan College of Pharmacy.

162, *Kennington Park Road, London, S.E.*

Principal.—Mr. Watson Will. Demonstrators.—Messrs. G. T. Branch and H. Lucas. Secretary.—Mr. W. S. Carver.

Day Classes are held in chemistry (inorganic, organic, and practical), materia medica, pharmacy, botany, vegetable histology, and physics. Hours, from 9 a.m. to 6 p.m. There are three sessions: Winter, from September 1 to December 31; Spring, from January 1 to April 10; Summer, April 12 to July 24.

Fees.—Minor course, £10 10*s.*; Major course, £6 6*s.*; Major course, from September 1 to following July; fee, £12 12*s.*

Evening Classes (7 to 10 p.m.) are held in chemistry (inorganic, organic, and practical), pharmacy, materia medica, botany, physics, prescription reading, and histology. Minor courses similar to day. Fee for one course, £3 3*s.* Extra evenings may be taken for practical work.

Newington College of Chemistry and Pharmacy.

26 *and* 28, *Newington Causeway, London, S.E.*

Principal.—Mr. Frederick Davis.

Private Classes (day, 10 to 5; evening, 5.30 to 8) are held in chemistry, biology, botany, materia medica, microscopy, pharmacy, physiology, prescriptions, sanitary science, and hygiene.

Minor Fees, £10 10*s.*—Especial private tuition may be arranged for any desired subject.

Brixton School of Chemistry and Pharmacy.

12, *Knowle Road, Brixton, London.*

Principal.—Dr. A. B. Griffiths, F.R.S. (Edin.), F.C.S.

At this school day and evening classes are held for the Minor and Major examinations. Tuition is afforded in chemistry, botany, materia medica, pharmacy, physics, and prescriptions. Each student receives the utmost assistance in his work, and every endeavour is made to secure a successful issue. The school is fitted with the best appliances, and there are also collections of materia medica specimens, microscopic preparations of drugs, rare chemicals, essential oils, etc.

City School of Chemistry and Pharmacy,

27, *Chancery Lane, London, E.C.*

Staff.—Messrs. G. E. Skerry, M.A.; F. A. Hocking, B.Sc., Ph.C.; and T. Humphreys, B.A.; M. J. Cole; H. Stewart, M.A. (Edin.); J. Ashton, M.A.; J. L. Lobby, F.G.S., etc., and L. Orchard, M.A.

Day Classes are held in all subjects for the Minor examination, including chemistry, physics, and pharmacy, materia medica, botany, prescription reading, microscopy, vegetable histology, analytical chemistry, practical pharmacy, Latin, mathematics, geology and biology (practical and theoretical), the courses beginning in January and June respectively. Fee for the six months' course, £12 12*s.*

Evening Classes for the Minor are also held. Six months' fee, £7 7*s.*

Birkbeck Literary and Scientific Institution.

Breams Buildings, Chancery Lane.

Arrangements have been made for the instruction of students in chemistry, biology, and experimental physics, in conformity with the requirements of the Intermediate and Final B.Sc., the Preliminary Scientific (M.B.), and the Intermediate M.B. examinations of the University of London, of the Conjoint Examining Board of the Colleges of Physicians and Surgeons, and the Minor and Major examinations of the Pharmaceutical Society. Special attention will be paid to lecture experiments, and to individual practical work in each subject. The chemical, biological, and physical laboratories have been recently much enlarged and completely refitted, and accommodation is now provided for fifty students in each laboratory. Application should be made to the secretary for special prospectuses.

("*Where to Study*," *continued on page* 236.)

PHARMACEUTICAL JOURNAL.

A Weekly Record of Pharmacy and Allied Sciences.

ESTABLISHED 1841.

Circulating in the United Kingdom, France, Germany, Austria, Italy, Russia, Switzerland, Canada, the United States, South America, India, Australasia, South Africa, etc.

Editorial Office: 17, BLOOMSBURY SQUARE, W.C.

Publishing and Advertising Office: 5, SERLE STREET, W.C.

LONDON: SATURDAY, SEPTEMBER 12, 1896.

THE EDUCATION OF PHARMACISTS.

CHIEF amongst the objects which have received the fostering care of the Pharmaceutical Society continuously since its foundation has been the education of those for whose especial benefit it exists, and probably stronger feelings of loyalty towards the Society exist in the minds of those who have worked in the historic class-rooms and laboratories of the School of Pharmacy than is altogether possible in other cases. More than half a century ago the School was established by the Society with a view, as it was expressed in these pages at the time, to ensuring the most complete and efficient education in those branches of knowledge the study of which is essential to all who would call themselves pharmacists. The most eminent men available at the time were engaged as teachers, and from the outset the greatest care was taken to maintain a high standard in the lectures and laboratory instruction. Moreover, as years have rolled on, money has been spent without stint in order that the courses of instruction should meet the immediate wants of pharmaceutical students, and stimulate them to such further progress in their after careers as would tend to elevate the status of pharmacy generally. In this way a sum approaching eighteen thousand pounds has been spent by the Society on the School of Pharmacy during the past twenty-five years. From time to time such changes as seemed necessary have been made in the scheme of education originally planned by the Founders of the Society, but the same chief idea has always been kept in view, viz., that the School should exist to supply the best possible means for perfecting the scientific and technical education of pharmacists. Many honoured names have been connected with the School, suitable men having at all times been found prepared to undertake the task of tuition, whilst willing students eager to perfect themselves in their art, have been as ready to learn, and doubtless similar conditions will continue to prevail in the future, however the needs of the times may alter.

So long as the system of apprenticeship in its original form prevailed largely amongst those who practised the art of pharmacy, comparatively little essential modification of the original scheme was necessary. But that system in its entirety has proved to be incompatible with the trend of modern progress, and it has become necessary to find some other system than apprenticeship whereby the efficient training of pharmacists may be ensured. Subjects that were formerly taught satisfactorily in the pharmacy and there alone, cannot now be mastered thoroughly during the prevailing short periods of pupilage, even if master pharmacists were always prepared to impart the needed instruction. Specialisation has been at work, and now, therefore, schools must needs replace the dispensing counter and laboratory as places of pharmaceutical instruction, in addition to serving the wider purpose of teaching pure science. It is noteworthy in this connection that, early in the present century, when the Associated Apothecaries were endeavouring to obtain exclusive control of the practice of pharmacy, Dr. G. M. BURROWS, one of their principal leaders, and a determined opponent of the chemists and druggists, urged in a communication to the *London Repository*, as mentioned on p. 221, that a school should be established in the metropolis, where pharmacy and the allied sciences and arts would be practically taught and illustrated, "even to the very manipulations of the art" of pharmacy. This is probably the earliest recorded expression of opinion as to the inefficiency of the shop as a complete training ground for pupils. It is now generally recognised that such is the case in most instances, and it is a source of gratification that the Society's School of Pharmacy, no less than others, has accepted this position and that, whilst the Council of the Society has striven to keep the scientific tuition at the highest pitch possible, it has not been slow to recognise the needs of the student of to-day. Changes have been made in various directions whenever such seemed absolutely necessary, and as a whole progress has been continuous.

During the past few years, however, a greater change than any that preceded it has been taking place, and to-day we are able to announce the practical completion of a plan that has been very slowly evolved and has only quite recently assumed definite shape. In its main features this change is practically a reversion to the arrangements existing prior to 1873, but nevertheless the School established by JACOB BELL and his friends now enters upon a new period of its existence, which will be distinctly marked off from that which has directly preceded it by most radical and sweeping alterations. First, and most important of all, the School course of instruction is extended to eighteen months, both junior and senior courses of study being conducted at the same time. This was a change that was bound to come, as it is fast becoming a physical impossibility to perform the required work in a shorter period of time. Then, the direct control of the School is reassumed by the Council of the Pharmaceutical Society, the class fees are appreciably reduced and the School staff is thoroughly re-organised, whilst the School premises are to be brought thoroughly up to date. Henceforth the staff will consist of the three professors—of chemistry, botany, and materia medica and pharmacy respectively—who will be assisted by efficient assistants and demonstrators appointed by the Council. Steps will be taken, moreover, to keep the latter body in constant touch with the ordinary work of the School, as well as with that carried on in the Research Laboratory, by means of a visitor selected from amongst the members of Council. All these changes are in the nature of advances, and though their advantages may not be manifest immediately, it is not too much to expect that they will result in permanent benefit to the School, to the Society, and to pharmacy as a whole. They should, therefore, be gladly and freely welcomed, alike by principals and students, as tending in the direction of ultimate good, through the specialisation and recognition of pharmacy as a distinct and honourable profession.

ANNOTATIONS.

PHARMACEUTICAL EDUCATION—PAST, PRESENT, AND TO COME is dealt with by Mr. Barnard Proctor in the present number of the Journal in his own inimitable style. Many will agree with what he says because they believe it to be true, others doubtless will disapprove because they do not like it, but all must acknowledge that the venerable essayist deals severe home-thrusts. It is unnecessary to comment upon the matter, which speaks for itself. Possibly, however, counter-strokes may be forthcoming from others who think their opinions worth airing.

THE "MINOR" PROBLEM SOLVED by Mr. Herbert Bridges seems to be, more correctly speaking, the problem of systematic scientific education during the term of pupilage. It is remarkable how, as years roll on, the number of places increases where arrangements of the kind described are quietly and unostentatiously carried out. Last year pharmacists were surprised to find that the little town of Kendal, with a population of less than 15,000, had overcome the difficulty they had so long experienced in fairly combining conscientious treatment of their apprentices, with due care for their own interests, and now Norwich—a much larger place, but yet having only about 100,000 inhabitants—has arrived at a similar result by somewhat different means.

SPECIAL EDUCATIONAL FACILITIES for pharmaceutical students are now offered in a larger number of centres than ever, as witness the list published in our pages this week. In many other places elementary science classes are available, and it should never be forgotten that science is one and the same wherever taught. The groundwork in any scheme of pharmaceutical education should always be the so-called "pure" sciences. The application of these to pharmacy will come in due course, and will be valuable in proportion to the soundness of the preliminary studies. No student need be perturbed because those who first attempt to teach him chemistry or botany are totally ignorant of matters pharmaceutical. In fact, did he but know it, this is the best kind of teacher to have. Learn the subjects thoroughly and practically from the very outset, and the application will soon suggest itself in the everyday routine of the pharmacy.

THE COMPULSORY CURRICULUM idea is evidently making headway amongst pharmacists, unconsciously perhaps but yet steadily. For it is difficult otherwise to satisfactorily interpret the evidence afforded by the spread of the educational movement in different parts of the country. With the average Britisher's dislike of the word compulsion, though he recognises the fact itself in a multitude of ways, the pharmacist of this country has struck at the suggestion of a compulsory curriculum for his successors, but the needs of the times have "im"-pelled him to set to work to arrange a local curriculum. This recognition of the necessity of "a" curriculum must logically develop itself into the idea of a uniform course of pre-examination study, and the case for a compulsory curriculum be thus fully granted.

THE NUMBER OF WOULD-BE PHARMACISTS is maintained with remarkable persistence, and, as observed elsewhere in this issue (see p. 241), in spite of despondent statements on the part of those already "in the swim." Perhaps, after all, pharmacy is not such a poor occupation as it may at times appear, or maybe diplomatic grumbling is resorted to as a means of keeping down the numbers. Whatever the reason the number of recruits is steadily maintained. Whilst 769 candidates passed the First examination or its equivalents during the year ending July 31, 1895, there were 805 who succeeded during the next twelve months. New chemists and druggists to the number of 488 for the twelve months, were registered up to the end of July last, being four more than for the corresponding period ending July 31, 1895.

THE MAJOR EXAMINATION, however, continues to repel rather than attract, only 63 passing that ordeal at the last four examinations, as against 70 for the four immediately preceding. Comparison of entries and passes for the different examinations is, as usual, exceedingly instructive:—

Examination.	Year ending July 31, 1895.		Year ending July 31, 1896.	
	Entries.	Passes.	Entries.	Passes.
First	1484	769	1618	805
Minor	1394	484	1396	488
Major	152	70	129	63

BELL SCHOLARS are entitled to receive a money grant of thirty pounds and free admission to the Elementary Course of instruction in the School of Pharmacy, *i.e.*, for a whole session. In view of the possibility of difficulties arising, as recently pointed out by a former Scholar, inquiry has been made, and we are informed that at the expiration of the Elementary Course the Scholar may make application to the Council for free admission to the Advanced Course in the following session, and it is understood that each case will be decided upon its merits—that is to say, the matter may be regarded as virtually resting with the Scholars themselves, this further benefit being conferred upon them if they have deserved it. The suggestion of "A Former Bell Scholar" (*ante*, p. 175), that the free course of tuition should be extended by another half session, has therefore been anticipated.

FRENCH PHARMACIENS have lately been swindled in rather a novel manner. An individual pretending to be a maker of rubber stamps calls in at the pharmacy and endeavours, apparently, to do business, incidentally examining the stamp of the establishment, and, in order to show its imperfections, making an impression on pieces of paper of his own production. Armed with these vouchers he betakes himself to some wholesale drug house or to some specialty dealer, and fills in the forms in the name of the unfortunate pharmacist for goods which amount to a good round sum. As a result several pharmacists have received invoices for goods which they have neither received nor ordered. One case, which seems to show that French wholesale firms conduct their business somewhat loosely, is that in which a pharmacist received a claim from a house with which he did not do business for the following items: — 60 grammes cocaine, 500 grammes iodide of potassium, 1 kilo. antipyrine, 1 kilo. subnitrate of bismuth, and 10 grammes of pilocarpine nitrate, the total amounting to over 200 francs. This reveals a certain laxity of business dealing when goods of such value can be carried away by the first comer, on presenting an order from a pharmacist who is not even a customer of the house; the selection of the articles, it may be observed, shows that the thief has some knowledge of the business of pharmacy as well as of his own.

BACTERIUM COLI, under which name are included several organisms, is considered by Dr. Kanthack to be undoubtedly the most ubiquitous germ within and without the body. He has separated it from all sorts of sputa, whether phthisical, influenzal, bronchitic, or pneumonic; from the saliva of healthy individuals, from fœtid urine, from vaginal and cervical uterine secretions, from diphtheritic membranes, from various septic discharges, and even from the liquor amnii. Outside the body the bacterium is to be found almost everywhere, for instance, in dust, soil, and rain water collected in the square of Bartholomew's Hospital. The author has also found it in ice chambers containing frozen mutton, and on the frozen surface of the carcases.

SCIENTIFIC EDUCATION.—Several letters have appeared in response to the article on this subject in the *Times*, and while all of the writers agree as to the prevailing deficiency of provision for thorough scientific training in this country, the real cause of that deficiency is touched upon by only two of them. Mr. J. E. Marsh, writing from the University Museum, Oxford, points out that if manufacturers are to furnish the driving power for reform, their education up to that position must first be carried out. Improvement in this respect is purely a matter of education. Until our public schools and universities recognise that science is to take a footing of equality with classics and mathematics in their educational system, there can be no hope of such a change in general public opinion as will influence manufacturers in common with the rest of the educated community. At present, however, scientific education can hardly be said to exist at all in this country. The opinion expressed in another letter from Professor Tilden is to the same effect. He says that in regard to scientific education the old universities are doing next to nothing. At Oxford, chemistry is practically dead, and at Cambridge it is little better off. While the "elegant imbecility of classical learning" absorbs the lion's share of scholarships and fellowships, University graduates exclusively saturated with Greek and Latin will continue to be incapable of comprehending scientific subjects or recognising their importance, to suffer from a kind of mental hemiplegia, such as is frequently manifested by the more highly educated members of the community, and nowhere more painfully than in our law courts. Naturally the influence exercised by the universities in moulding and directing thought will penetrate into all the ramifications of popular instruction, so that in the main the spirit pervading the atmosphere of our universities governs the work of schools and places science, as well as other "modern" studies, at a disadvantage.

THE INSTITUTE OF DENTAL TECHNOLOGY AND SCHOOL OF MECHANICAL DENTISTRY, founded and conducted by Mr. Geo. Cunningham, M.A., L.D.S., seems to be an up-to-date, fully-equipped institution, in every way suited to meet the requirements of pupils desirous of qualifying for the registered titles "dentist" and "dental practitioner." The object of the school, a course in which is recognised by the General Medical Council as equivalent to the term of pupilage required by the Dentists' Act of 1878, is to provide such instruction as will make the pupil thoroughly efficient in his profession, as far as the mechanical operations are concerned, before he begins to perform surgical operations. The pupil is also assisted in the selection of a registered dental practitioner with whom to serve the one year's *bonâ fide* apprenticeship required by the Medical Council. The instruction given at the Institute is of the most practical kind, no requirements of the dental profession being omitted in the curriculum, except, of course, surgical operations, to gain a knowledge of which the pupil is required to attend a dental hospital for two years. One great advantage of the Institute is that the pupil studies under the guidance of specialists in each department. There is a three months' probationary course in manual training, and no student failing to show satisfactory progress is accepted as a full curriculum pupil or apprentice. The fee is £21, which will be accepted as part premium, and the course as part time, in case of any subsequent indenture. The school re-opens on Monday, September 21. Full particulars may be had from the Principal, Geo. Cunningham, M.A., D.M.D., L.D.S., 4, Langham Chambers, Portland Place, London, W.

THE BATTLE OF THE EARLY CLOSING BILLS has been transferred from the House of Commons to the daily press, and for some days past the chief sponsors of the rival Bills have spurred their fiery pens in support of the compulsory and voluntary plans respectively. Sir John Lubbock led off the ball by stating that he and his friends have reluctantly come to the conclusion that the best chance of obtaining some mitigation of the terribly and unnecessarily long hours, which are ruining the health and shortening the lives of shop assistants and shopkeepers, is by urging the Government to pass a measure more or less on the lines of the Bill which has the general approval of the Parent Early Closing Association and of the Shopkeepers' Associations throughout the country, besides having been approved by both a Select Committee and the Grand Committee. In response to this, Sir J. Blundell Maple complacently referred to the "definite abandonment of all attempts on the part of Sir John Lubbock and his friends to pass a compulsory closing Bill" as marking a step in advance, but protested against the idea of asking the Government to pull chestnuts out of the fire for Sir John Lubbock, and to interfere with the liberties of the subject by compelling shops to close under penal laws. Retorting, in his heaviest statistical style, Sir John says the Early Closing Association will certainly not relax its efforts, and continues:—"We think we may fairly appeal to the Government to deal with the question, which is certainly one gravely affecting the health and well-being of our town population, and in which it is, I think, evident, that they will have the warm support of those concerned."

A BIOLOGICAL STATION FOR THE BROADS was recently advocated in the *Standard*, and Mr. Edward Corder, pharmaceutical chemist, Norwich, adds his testimony as to the real fitness of the district for such a purpose, not only from a zoological point of view, but also on account of its botanical richness. He points out that there are many hundred acres of backwaters which not only have never been searched, but are hardly known to any but the marshmen who cut the reeds. These places swarm with insect larvæ of every description, and all the minute life so interesting to a microscopist, whilst marsh and aquatic plants, comparatively rare elsewhere, are common there.

POISONING BY MAGNESIUM SULPHATE.—Dr. Headley Neale (*Lancet*) records a case of poisoning by Epsom salts in a lad aged fifteen, who had taken an ounce for the relief of constipation. Vomiting, cyanosis, stupor, and tetanic spasms were among the symptoms, with weak pulse and cold extremities. Finally under cardiac stimulants the patient recovered. It is noteworthy that the dose had failed to purge the patient. Dr. Luff has already recorded a fatal case of poisoning from a similar dose of Epsom salts.

WHERE TO STUDY.

(*Continued from page* 232.)

PROVINCIAL SCHOOLS.

BARROW-IN-FURNESS.

Barrow-in-Furness Higher Grade School.

At the Barrow Higher Grade School technical classes are held on Thursday and Friday evenings, commencing September 17, in theoretical and practical chemistry, physiology, and hygiene. Further particulars may be obtained from the Secretary, Mr. C. F. Preston, Town Clerk.

BIRMINGHAM.

Central School of Pharmacy.

90, *New Street*, *Birmingham.*

Mr. F. Stokes Dewson holds classes for the pharmaceutical examinations—Major, Minor, and Preliminary.

The classes are held day and evening.

Practical pharmacy and dispensing receive special attention.

Temple Chambers Tutorial Classes.

PRINCIPAL.—Mr. F. H. Alcock, F.I.C., Pereira Medallist.

TUTORIAL CLASSES for pharmaceutical students are held at the Analytical Laboratory, Temple Chambers, Broad Street Corner, Birmingham. The laboratories are conveniently arranged for the practical study of the subjects necessary for the Minor and Major qualifications. The fees are dependent upon the hours of attendance and subjects required. For a few time-students the fees are 7 guineas per quarter. As each student works independently, he may begin when he pleases.

Mason College, Birmingham.

TEACHERS.—Professors Percy F. Frankland, Hillhouse, and Mr. Dencer Whittles.

DAY CLASSES are held in chemistry, botany, materia medica, pharmacy, etc.

FEES.—Chemistry (from October to March and a weekly tutorial class), £5 5*s.*; organic chemistry suitable for Major students (April to June), £1 11*s.* 6*d.*; botany (spring and summer terms), £2 2*s.*; systematic botany (summer term), £1 1*s.*; materia medica and pharmacy, £1 1*s.*; practical chemistry, 10*s.* 6*d.*

Birmingham Municipal Technical School.

Suffolk Street, *Birmingham.*

DAY CLASSES are held in theoretical and practical chemistry for chemists and druggists. Teacher: Mr. C. J. Woodward, B.Sc.

FEE.—5*s.* per session.

EVENING CLASSES are held in botany. Teacher: Mr. J. W. Oliver. Fee: 2*s.* 6*d.* per session; and also in physics.

TEACHERS.—Dr. Sumpner, and Mr. P. C. Coultas, A.R.C.Sc.

FEE.—5*s.* per session.

BRADFORD.

Bradford Technical College.

PRINCIPAL.—Mr. Walter M. Gardner, assisted by Messrs. A. B. Knaggs and W. West.

DAY AND EVENING CLASSES are held in chemistry (inorganic and organic), qualitative chemical analysis, quantitative chemical analysis, botany, organic materia medica, and biology.

BRISTOL.

University College, Bristol.

TEACHERS.—Professors Sydney Young, D.Sc. (Lond.), F.R.S A. P. Chattock, M.I.E.E., C. Lloyd Morgan, F.G.S., and Messrs. F. E Francis, B Sc., Ph.D., E. H. Strange, B.Sc., L. N. Tyack, S. H. Reynolds, M.A., A. B. Prowse, M.D., and F. W. Stoddart, F.I.C.

DAY AND EVENING CLASSES are held at the University College in chemistry (organic and inorganic), experimental physics, and botany. There are also chemical and physical laboratories. In addition, the Bristol Pharmaceutical Association has for two years past organised a class for instruction in materia medica and pharmacy. Fee, 7*s.* for the course. This class meets weekly during the two winter sessions, and is conducted by Mr. Benjamin Keen, Secretary to the Association.

CAMBRIDGE.

Cambridge Pharmaceutical Association.

In connection with this Association classes are held in botany and chemistry at the Technical Institute, Cambridge, commencing in October, and are open to all pharmaceutical students. Further particulars may be obtained from the secretary, Mr. E. Saville Peck, 30, Trumpington Street, Cambridge.

LEEDS.

Leeds School of Science and Technology.

A large number of students in pharmacy attend this school. The courses in theoretical and practical chemistry are under Mr. S. J. Harris, M.Sc., assisted by Mr. Ferguson, A.R.C.S. That in physics is under Mr. Tindall, B.Sc. Mr. N. Walker conductsthe botany class.

Practical work in chemistry, physics, and botany is offered in addition to the lecture courses. The lecture fees are from 2*s.* 6*d.* per session, and the laboratory fees from 7*s.* 6*d.* The classes are held in the evenings between 7 and 9.45.

LIVERPOOL.

Liverpool School of Pharmacy.

6, *Sandon Terrace*, *Upper Duke Street*, *Liverpool.*

PRINCIPAL.—Mr. R. C. Cowley, assisted by Mr. H. B. Morgan.

DAY CLASSES are held in all the subjects of the Minor and Major examinations.

FEES.—Minor course, £10 10*s.*; Major course, £9 9*s.*

Once a week classes are held, one evening for juniors and one for advanced students. The fee for this class for an entire course is £3, or for the whole session £7 10*s.* The course of study in this school is controlled by the Council of the Liverpool Chemists' Association.

University College, Liverpool.

School of Pharmacy, Brownlow Hill.

PRINCIPAL.—Professor G. H. Rendall, M.A., Litt.D.
DEAN.—Professor A. M. Paterson, M.D.
PROFESSORS AND LECTURERS.—Chemistry: Professor J. Campbell Brown, D.Sc, F.C.S., F.I.C.; T. Lewis Bailey, Ph.D.; Samuel B. Schryver, B.Sc., Ph.D.; F. E. Francis, B.Sc., Ph.D. Physics: Professor Oliver J. Lodge, D.Sc., LL.D., F.R.S.; James L. Howard, D.Sc. Botany: Professor R. J. Harvey Gibson, M.A., F.L.S.; Charles E. Jones, B.Sc. Materia Medica: Professor W. Carter, LL.B, M.D., B.Sc., F.R.C.P.; Prosper H. Marsden, F.C.S. Pharmacy: Prosper H. Marsden, F.C.S.

A complete course of instruction for the examinations of the Pharmaceutical Society of Great Britain may be taken in University College. The session consists of a first course, beginning in October, and a second course, commencing in May. The Manchester Pharmaceutical Association Scholarship, of the annual value of about £26, may be held in this school. Lectures and practical instruction are provided in all the essential subjects, and there are well-equipped museums of chemical, botanical, and materia medica specimens including a fine herbarium and a collection of drugs presented by the Pharmaceutical Society. It is possible to attend all the classes during the year, the time table being as follows:—

TIME TABLE.

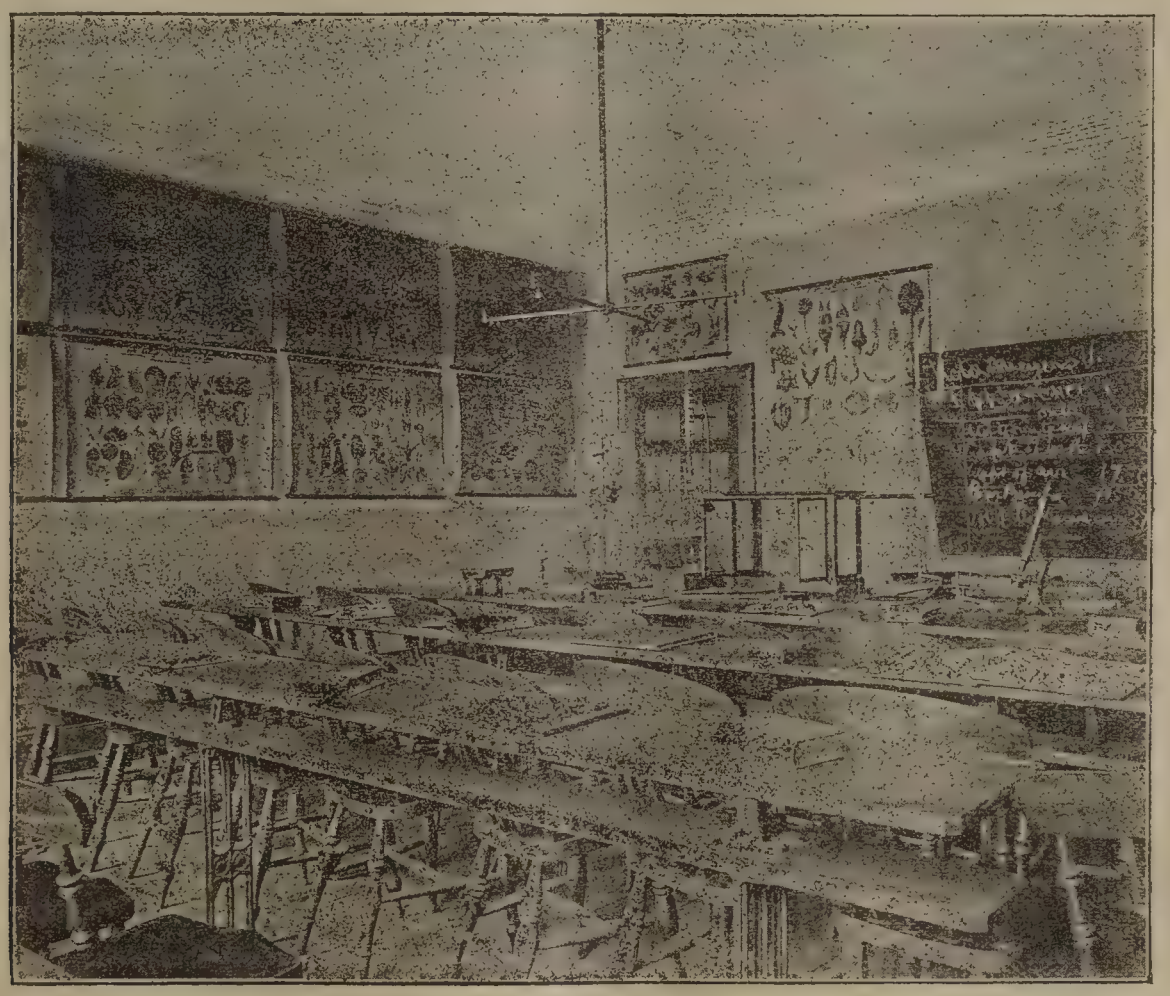
Autumn and Lent Terms.	M.	Tu.	W.	Th.	F.	S.
Chemistry (Lectures, Tutorial, Practical)	3	3	at hours to be arranged.		3	
Physics, Lectures			10·20			
Botany (Lectures, Practical)			2–4			
Materia Medica (Lectures, Practical)	9		9	9		9
Pharmacy (Lectures, Practical)		9 2–3·30		2–3.30	9	

TIME TABLE (*continued*).

Summer Term.						
Chemistry (Lectures, Tutorial, Practical)	3	3	at hours to be arranged.		3	
Physics, Lectures	4	12.30		12.30		
Botany (Lectures, Practical)			2–4			
Materia Medica (Lectures, Practical)	9	9		9		9

SCHOOL FEES.

	First Course.	Second Course.
Chemistry (Lectures)	£3 0 0	£2 0 0
Chemistry (Practical)	8 0 0	6 0 0
Physics, Lectures	1 0 0	6 0 0
Botany (Lectures, Practical)	3 0 0	2 0 0
Materia Medica (Lectures, Practical)	2 2 0	2 2 0
Pharmacy (Lectures, Practical)	4 4 0	—



LECTURE ROOM IN THE MANCHESTER COLLEGE OF PHARMACY.

Courses may be taken out separately: or a composition fee of £17 may be paid, covering the entire Junior course. Students paying the composition fee are required to complete the course within three sessions from the date of payment. Applications for admission and all inquiries must be addressed to the Registrar, University College, Liverpool.

MANCHESTER.

Manchester College of Pharmacy.

225a and 227a, Oxford Street, Manchester.

PRINCIPAL.—Mr. Charles Turner.
DAY CLASSES are held in prescription reading, and Latin, practical dispensing, pharmacy, materia medica, botany, chemistry, and physics.

FEES.—Minor course: (January to April), £9 9*s.*; (April to July), £9 9*s.*; (second Monday in August to January), £11 11*s.* Major course: £6 6*s.*

EVENING CLASSES are held in chemistry, Latin, physics, practical chemistry and dispensing, botany, materia medica, and pharmacy. The fees are, Minor course: (January to July), £4 4*s.*; (September to December), £3 3*s.* Major course: (January to July), £3 3*s.*; (second Monday in August to January), £2 10*s.*

A ONCE A WEEK CLASS is held in practical chemistry, dispensing, pharmacy, chemistry, Latin, physics, botany, and materia medica. The fees for this class are: Minor course (January to July), £4 4*s.* Major course: (January to July), £3 3*s.*; (second Monday in August to December), £2 10*s.*

Owens College, Manchester.

PRINCIPAL: A. W. WARD, LITT.D., LL.D.

Pharmaceutical Department.

TEACHERS.—Professors A. H. Young, H. B. Dixon, W. H. Perkins, F. E. Weiss, D. J. Leech, and Mr. W. Kirkby.

DAY CLASSES are held in chemistry, practical chemistry, botany, practical botany, organic chemistry, materia medica, pharmaceutical chemistry, pharmacy, pharmacy law. The winter session is devoted to the subjects for the Minor examination and the summer session to courses suitable for students preparing for the Major examination.

FEES.—A composition fee of £13 13*s.* admits to the College courses for the Minor examination.

An entrance exhibition, value £10, is awarded on the results of a competitive examination in elementary botany and chemistry. It is open to students entering for the full pharmaceutical course, and notice must be given to the registrar by intending candidates before September 20. The Manchester Pharmaceutical Association may also be held at this college.

Northern College of Pharmacy.

100, *Burlington Street, Manchester.*

TEACHERS.—Messrs. George Clayton and Frederick Lawson.

The plan of work is the tutorial system.

FULL TIME AND AFTERNOON CLASSES are held in organic and inorganic chemistry, physics (theoretical), practical chemistry, practical pharmacy, dispensing, theoretical pharmacy, botany, materia medica, prescription reading, theoretical chemistry, microscopy, and Latin.

FEES.—Minor course (day), January to April, £9 9*s.*; April to July, £9 9*s.*; September to January, £10 10*s.*; (afternoon), January to July, £4 4*s.*; September to December, £2 10*s.* Major course, January to April, £5 5*s*; April to July, £5 5*s.*; September to January, £6 6*s.*

EVENING CLASSES are held in theoretical chemistry, physics Latin, practical chemistry, dispensing, botany, materia medica, microscopy, and pharmacy. The fees for these classes are: Minor course, January to July, £4 4*s.*; September to December, £2 10*s.* Major course, January to July, £3 12*s.* 6*d.*; September to January, £2 5*s.*

NOTTINGHAM.

Nottingham and Notts. Chemists' Association.

2, *Chapel Bar, Nottingham.*

The Council of the above Association have made arrangements for a complete three years' course of instruction, suitable for students preparing for the Minor examination of the Pharmaceutical Society, to be given at the University College, Nottingham. The course includes chemistry and botany, both theoretical and practical, physics, materia medica, and dispensing.

Pharmaceutical chemistry (Mr. R. M. Cavan), fee, 15*s.* per term; elementary organic chemistry, suitable for advanced pharmaceutical students (Mr. J. J. Sudborough), fee 7*s.* 6*d.*; materia medica (Mr. C. Haydon White), fee for the course, 15*s.*; physics (Professor Heaton), fee 5*s.*

The forthcoming session comprises botany and dispensing (practical and theoretical).

NEWCASTLE-ON-TYNE.

North of England School of Chemistry and Pharmacy.

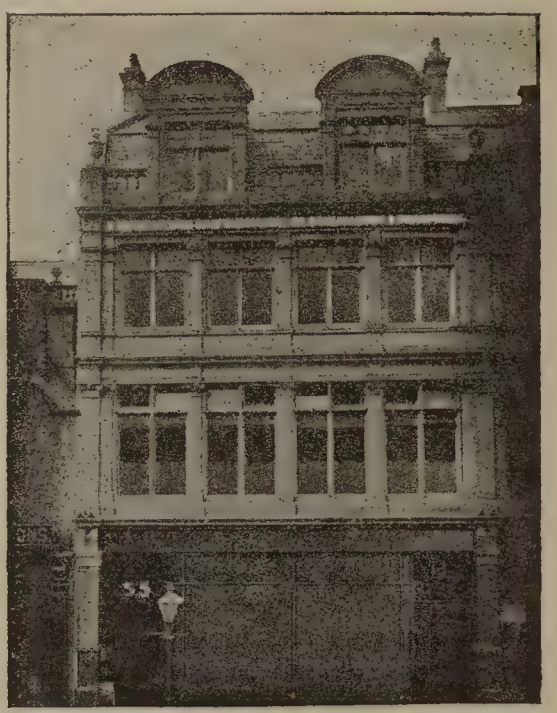
55, *Northumberland Street, Newcastle-on-Tyne.*

PRINCIPAL.—Mr. George F. Merson.

DAY AND EVENING CLASSES are held in all subjects of the Minor and Major examinations.

FEES.—Full time classes, £8 8*s.* or £14 14*s.* for double term of six months; evening classes, £3 3*s.*; Wednesday afternoon class, £3 3*s.* The fees are in each case per quarter.

A special weekly class for junior assistants and apprentices is held by Mr. Merson. The fees for this class are £1 1*s.* for each



subject, or £3 3*s.* for all. Apprentices are encouraged to take three or four consecutive winter courses of six months each so as to prepare a sound groundwork of examination subjects.

CLASSES FOR MEDICAL AND VETERINARY STUDENTS.—Chemistry, botany, materia medica, pharmacy, etc., are also held.

PRIZES (competitive examination at end of each winter course) offered, of books, to apprentice students.

PLYMOUTH.

Plymouth Science, Art, and Technical Schools.

DAY AND EVENING CLASSES are held at these schools in chemistry, physics, physiology, materia medica, botany, biology, dentistry, pharmacy and hygiene.

TEACHERS.—Chemistry, J. Burns-Brown and Dr. Thackrah; physics, Mr. Walker; physiology, materia medica and hygiene Dr. Wilson; botany and biology, Mr. Hodgson.

The session extends from September to July.

SHEFFIELD.

Sheffield College of Pharmacy.

118, *Princess Buildings, The Moor, Sheffield.*

TEACHERS.—Messrs. Robert B. Greaves and J. W. J. Turner.

DAY CLASSES are held in chemistry and physics, practical chemistry, botany, pharmacy, materia medica, prescription, reading, organic chemistry, dispensing, and practical pharmacy.

FEES.—Minor (full course), £9, (short course), £5; Major (full course), £7, (short course), £4 10*s.*

EVENING CLASSES are held in botany, chemistry, and practical chemistry. The fee per term is £1 12*s.* 6*d.* inclusive. Winter session commences October 1.

Sheffield School of Pharmacy.

New Surrey Street, Sheffield.

The Sheffield Pharmaceutical and Chemical Society holds classes in botany, chemistry, materia media, etc. The materia medica and botany classes are conducted by Mr. J. Austen; chemistry and practical chemistry by Mr. J. C. Platts; and a pharmacopœia class by Mr. C. O. Morrison. Full particulars and syllabus can be obtained from the school secretary.

SCOTLAND.

ABERDEEN.

Aberdeen School of Pharmacy.

21, Bridge Street, Aberdeen.

TEACHER.—Henry Fraser, Ph.C., etc.

EVENING CLASSES are held in connection with the Aberdeen and North of Scotland Society of Chemists and Druggists, preparatory for the Minor examination. The winter course commences in October and terminates in March, and a short summer course commences April 1 and terminates June 30; the latter course being more particularly suited for advanced students. The class meets every night (9–11 p.m.) for the consideration of the various subjects, which are fully studied both theoretically and practically. Day pupils are received by special arrangement, and special arrangements are also made for medical students, whereby they may receive instruction in practical chemistry and pharmacy.

FEES.—October to March, £3 3*s.*; April to July, £2 2*s.*; single subjects, 10*s.* 6*d.*

DUNDEE.

DUNDEE SCIENCE AND ART CLASSES.

MR. J. BRAIK MASON holds classes in chemistry, and Mr. James Aimer classes in botany, at the Science and Art classes held at the Y.M.C.A., Dundee. The fee for two classes is 7*s.* 6*d.*, or 5*s.* for one.

EDINBURGH.

Edinburgh Royal Dispensary and School of Pharmacy.

21, West Richmond Street, Edinburgh.

LECTURER.—Mr. William Duncan, assisted by Messrs. Mackenzie and German, pharmaceutical chemists.

DAY CLASSES are held in practical chemistry and physics, theoretical chemistry, pharmacy, dispensing and prescription reading, botany, materia medica, practical pharmacy and dispensing.

The session lasts from October to July, and is divided into three terms, which commence in October, January, and April.

FEES.—Major course, £8 8*s.*; Minor course, £8 8*s.*

EVENING CLASSES are held in practical work and theoretical subjects. The fee for these classes is £3 3*s.*

Edinburgh Central School of Pharmacy.

26, Clyde Street, Edinburgh.

TEACHERS.—Messrs. William B. Cowie, G. Malthouse, H. Herd, A. C. Cameron, and Walter Smith.

DAY CLASSES are held five days per week from 9.30 to 4.30.

FEE for either Minor or Major course £8 8*s.* per quarter. The school year is divided into three ordinary courses, commencing in October, January, and April, and one short course commencing in August.

EVENING CLASSES, meeting three nights per week, from 8 30 to 10.30, are also held.

FEE for either Minor or Major course £3 3*s.* per quarter.

GLASGOW.

Glasgow School of Pharmacy.

180, West Regent Street, Glasgow.

PRINCIPALS.—J. Henry Hoseason and J. Lothian, pharmaceutical chemists.

LABORATORY OF THE EDINBURGH CENTRAL SCHOOL OF PHARMACY.

DAY AND EVENING CLASSES for Preliminary, Minor, and Major examinations. The subjects included are chemistry and physics, botany, materia medica, pharmacy, and dispensing. The system of instruction consists of lectures, demonstrations, tutorial and practical classes.

FEES.—Major or Minor day classes, £8 8*s.* per quarter; Major or Minor evening classes, £3 3*s.* per quarter; Preliminary class, £1 1*s.* per quarter. Prospectus forwarded on application.

Glasgow and West of Scotland School of Pharmacy.

(Central School of Pharmacy.)

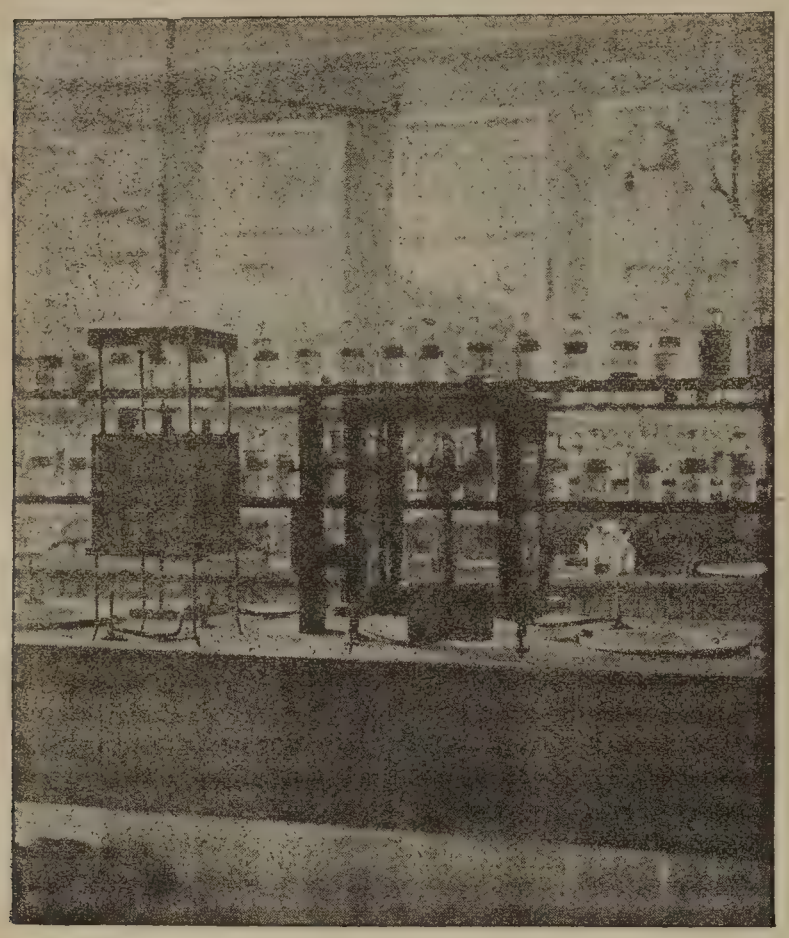
157, St. Vincent Street, Glasgow.

PRINCIPAL.—Thos. Mackenzie, assisted by efficient demonstrators.

DAY CLASSES are held in theoretrical and practical chemistry, physics, botany, including vegetable histology, materia medica, prescription reading, theoretical and practical pharmacy, and dispensing.

FEES.—Minor course, £8 8*s.*; Major course, £6 6*s.*

Evening Classes are held on Tuesdays, Wednesdays, and Fridays for the Minor examination, and on Tuesdays, Thursdays,



PART OF LABORATORY IN THE GLASGOW CENTRAL SCHOOL OF PHARMACY.

and Fridays for the Major. These classes include all the subjects taken in the day courses, both theoretical and practical.

Fees.—Minor and Major courses, £2 2*s*. two nights per week; £3 3*s*. three nights per week.

IRELAND.

DUBLIN.

School of Chemistry and Practical Pharmacy.

67, Lower Mount Street, Dublin.

Director.—Professor Tichborne, LL.D., F.I.C., assisted by Mr. P. Kelly, M.P.S.I.

The Irish Pharmaceutical Council established this school about eight years ago in order to obviate the serious inconvenience caused to pharmaceutical students through the discontinuance of evening lectures by the medical schools.

Everything in the way of chemistry likely to be of service to the pharmaceutical student in his profession is included in the course, which comprises the general principles of chemistry and chemical physics, qualitative chemistry, volumetric analysis, urine testing, public health chemistry, air analysis, etc.

The school is a very popular one with students, and the accommodation has had to be extended from time to time, and, owing to the crowded state of the school recently, a number of new benches are being fitted up for the re-opening in October next.

School of Botany and Materia Medica.

67, Lower Mount Street, Dublin.

Director.—Professor Ninian Falkiner, M.B., Fellow and Examiner in Materia Medica, Royal College of Physicians, Ireland, assisted by Mr. Henry Dixon, B.A., Assistant Professor of Botany in Trinity College, Dublin.

The lectures are given twice a week in the evenings, but besides there are demonstrations in Trinity College Botanic Gardens. The classes are so highly prized that, although only commenced last year, already nearly seventy students have taken advantage of them.

CORK, GALWAY, AND BELFAST.

Queen's Colleges and Private Classes.

For those students who find it inconvenient to study in Dublin, there are classes at the Queen's Colleges in Cork and Galway, while at Belfast, Mr. S. Templeton and Mr. Barklie hold classes specially for pharmaceutical students.

PHARMACEUTICAL SCHOLARSHIPS & PRIZES.

The Jacob Bell Memorial Scholarships.

Two scholarships are offered annually, and come into operation at the commencement of the session in October.

The Pharmaceutical Society's School is that in which the holders of the scholarships shall pursue their studies.

Each scholarship is of the annual value of £30, and is to be held for one year only. The payment is made in two moieties; the first when the scholar enters upon his studies in the School, and the second at the expiration of five months in addition to the endowment. The Council provides free laboratory instruction and admission to the lectures of the elementary course at the expiration of which the scholar may make application to the Council for free admission to the advanced course in the following session.

Manchester Pharmaceutical Association Scholarship.

The scholarship, of the value of about £26, is offered annually to students who have been apprenticed in certain districts in the North of England.

The Redwood Scholarship.

The Redwood Scholarship is offered annually in July to pharmaceutical chemists who are desirous of obtaining advanced instruction in chemistry and chemical pharmacology, with a view to conducting original investigations in these subjects.

The scholar receives the sum of £20, and is provided, free of cost, with a working bench, apparatus and materials in the research laboratory. He is required to work under the supervision of the Professor of Chemistry, and to observe the rules and regulations of the laboratory. The nomination of the scholar is made by the School Committee after ascertaining the candidate's fitness by means of an examination in chemistry and materia medica, or in such other manner as the Committee may think fit. The nomination of the Committee is submitted for the approval of the Council, who elects the scholar.

A Redwood scholar may be re-elected on the recommendation of the School Committee.

The holder of a Jacob Bell Memorial Scholarship, if he be a pharmaceutical chemist, will be eligible for election as a Redwood scholar after the expiration of his Bell Scholarship.

Applications for the Redwood Scholarship must be sent to the Secretary of the Pharmaceutical Society not later than July 25 in each year.

Salters' Research Fellowship in Chemistry.

This fellowship, of the value of £100, is offered annually by the Salters Company. It is tenable in the Research Laboratory, and the holder is expected to devote his whole time to original investigation. Further particulars may be obtained from the Professor of chemistry.

Pereira Medal.

Pharmaceutical chemists who were associates of the Society at the time of passing the Major examination will be entitled to compete for the following prizes at the end of the session in which they passed the Major examination:—

First prize.—Pereira medal in silver, and a present of books value £5, or thereabouts, given by the late Thomas Hyde Hills in memory of Jacob Bell.

Second prize.—The Pharmaceutical Society's medal in silver.

Third prize.—The Pharmaceutical Society's medal in bronze.

Herbarium Prize.

A silver medal is annually offered by the Council for the best herbarium, collected in any part of the United Kingdom, the Channel Islands, or the Isle of Man, between the first day of January in one year and the first day of July in the year following; and should there be more than one collection possessing such an amount of merit as to entitle the collector to reward, a second prize, consisting of a bronze medal, and also certificates of honour, will be given at the discretion of the Council. In the event of none of the collections possessing sufficient merit to justify the Council in awarding medals and certificates, none will be given.

Further particulars will be given in all cases by the Secretary of the Pharmaceutical Society, 17, Bloomsbury Square, London, W.C.

HOW TO BECOME A PHARMACIST IN GREAT BRITAIN.

INTRODUCTION.

In face of oft-repeated statements to the effect that the art of pharmacy is in a moribund condition and likely soon to become extinct, it would be not a little surprising to note the persistency with which large numbers of youths crowd into the ranks of the followers of Galen, were it not well known that all other crafts, and especially the professional and semi-professional ones, are similarly over-recruited.

A special attraction of the practice of pharmacy is the fact that it offers better returns in proportion to the outlay in time, training, and money than any kindred trade or profession. Indeed, the individual who is content with a modest livelihood may always depend upon securing it, other things being equal, by practising the pharmaceutic art.

If greater results than this are desired they may be attained in pharmacy—as in other directions—by the exercise of the usual faculties, patience and perseverance as a matter of course, combined with moderate ability and an intuitive perception how to do the right thing at the right moment.

But whatever be the ultimate object consciously or unconsciously aimed at, the best preparation for it is a thorough scholastic education, and the student who is wise will pass the Matriculation Examination of London University before taking any steps to enter upon his chosen profession. Failing this or some other examination, certificates of which are accepted by the Board of Examiners, he must pass the Pharmaceutical Society's First examination, particulars of which are given below, and is then entitled to registration as an Apprentice or Student.

FIRST EXAMINATION SYLLABUS.

This examination is held, at the following centres, at 11 o'clock, on the second Tuesdays in January, April, July, and October :—

Aberdeen	Carnarvon	Lancaster	Nottingham
Birmingham	Cheltenham	Leeds	Oxford
Brighton	Darlington	Lincoln	Penzance
Bristol	Dundee	Liverpool	Peterborough
Cambridge	Edinburgh	London	Plymouth
Canterbury	Exeter	Manchester	Sheffield
Cardiff	Glasgow	Newcastle	Shrewsbury
Carlisle	Hull	Northampton	Southampton
Carmarthen	Inverness	Norwich	York

Also at the following centres in July only :—

Jersey ; Guernsey ; Isle of Man (Douglas) ; Orkney (Kirkwall).

Candidates must give notice to the Registrar, 17, Bloomsbury Square, London, on a printed form of application, which can only be obtained from him, and pay the fee (£2 2*s*.) not less than fourteen days prior to that on which the examination is to be held. Each candidate must at the time of entry state at which of the centres he desires to present himself. The Boards of Examiners are empowered to accept certain certificates in lieu of this examination.

The examination is wholly in writing, and comprises the following

SUBJECTS.

LATIN.—Grammar ; translation of simple sentences from English into Latin. Translation into English from Cæsar, 'De Bello Gallico,' Book I., or Virgil, 'Æneid, Book I.

ARITHMETIC.—Numeration ; the first four rules—simple and compound ; Reduction ; vulgar and decimal fractions ; simple and compound proportion ; a thorough knowledge of the British and metric systems of weights and measures ; percentages and stocks.

ENGLISH.--Grammar and composition, spelling and quality of the handwriting being taken into account.

PUPILAGE.

The next step is to acquire the necessary technical qualification as pupil to a registered chemist. The most generally useful business training is obtainable in what is known as a "mixed" or "all-round" business, but as much more depends upon the pupil himself than upon the principal in acquiring skill in manipulation, etc., the class of business is not a matter of primary importance so long as the pharmacy selected is one where a practical knowledge of the art can be acquired.

The pupil should be sixteen or seventeen years old, and the term of pupilage at least three years, whilst a stipulation should be made that the pupil be permitted to attend day classes in chemistry or botany, or both. Evening classes are very well in their way, and especially as extras, but the brain is more receptive in the daytime. It is certain also that the status of pharmacy will never rise to a proper pitch until attendance at college courses is regarded as essential.

Chemistry (theoretical and practical) should occupy the pupil's attention entirely during the first year's class-work, but in the pharmacy he should be laying the foundation of a practical knowledge of the appearance of drugs and chemicals, of the correct rendering of prescription Latin, and of the ordinary operations of the pharmacy.

The second year's class-work should be chiefly chemistry, but elementary physics might be added, whilst outdoor work in botany should be encouraged on the weekly half-holiday. Simple tests might now be profitably applied to the drugs and chemicals in the pharmacy, the B.P. serving as a guide, with "Attfield" as an interpreter. An initiation into the mysteries of compounding and dispensing would probably follow at this stage.

During the third year the pupil's knowledge of chemistry should be gradually extended by studying different text-books to those employed at first. Then an elementary course in structural botany should be taken and some modern text-book on materia medica be systematically studied in conjunction with the B.P. Dispensing should now be familiar to the student, and his knowledge of British and metric weights and measures, posology, etc., become consolidated and, as it were, part of himself.

Pupilage ended, the student will do well, either at once or after a brief interval as junior assistant, to sit for the Jacob Bell or the Manchester Scholarship, as he ought by this time to be well acquainted with all the subjects of the examinations, and his knowledge of them will thus be satisfactorily tested. The possibility of failure should not be taken into consideration, for the question of success or failure is of but secondary importance.

But whether he wins a scholarship or not, assuming that he is over twenty years of age, he should next enter a school of pharmacy for a special course of instruction, prior to entering for the qualifying examination. Particulars of suitable schools in different parts of the country are given on preceding pages. In deciding upon a school and upon the length of time to be spent there, it should be noticed that the Council of the Pharmaceutical Society recommends that all candidates before presenting themselves for examination should receive a systematic course of instruction occupying a period of not less than six months ; and that such period of study should include at least sixty lectures in chemistry, eighteen hours' work in each week in practical chemistry, forty-five lectures and demonstrations in botany, and twenty-five lectures and demonstrations in materia medica.

The Boards of Examiners in London and in Edinburgh meet in January, April, July, and October, so that the candidate has plenty of opportunities for presenting himself ; and as there are two convenient centres, he is not obliged to travel an excessive distance, wherever he may be living. On passing the Minor examination, particulars of which follow, the whilom candidate is registered as a chemist and druggist, and is eligible for election as an Associate of the Pharmaceutical Society. He also becomes entitled to keep

open shop for the sale of poisons, enjoys a legal right to use the title "chemist and druggist" or any equivalent of this, and may, if he chooses, enter for the Major examination.

MINOR EXAMINATION SYLLABUS.

For Registration as Chemists and Druggists.

Each candidate must give notice and pay the fee (£5 5*s.*) to the Registrar in London, on or before the fifteenth day of the month immediately preceding that in which the Boards meet, and he will receive due notice of the date on which he will be required to present himself for examination. Each candidate must also state, at the time of giving notice, whether he desires to be examined in London or in Edinburgh.

When giving notice (for the first time), a candidate for the Minor examination must have attained the full age of twenty-one years, and must have been registered as having passed the First examination. He will at the same time be required to produce a Registrar's certificate of birth, and a certified declaration that for three years he has been registered and employed as an apprentice or student, or has otherwise for three years been practically engaged in the translation and dispensing of prescriptions.

The printed form on which this declaration is to be made can only be obtained from the Registrar, 17, Bloomsbury Square, London.

The following are the subjects of examination:—

CHEMISTRY AND PHYSICS.

The candidate will be expected to possess an elementary knowledge of the following subjects:—

(α) The law of the conservation of energy; the law of gravitation; the balance; specific gravity; atmospheric pressure; the barometer, air-pump, and siphon; the law of Boyle; temperature; thermometer; the law of Charles; the law of gaseous diffusion; V. Meyer's method for determining vapour densities.

(β) The chief characteristics of chemical action, the distinction of elements and compounds; the laws of chemical combination by weight and volume; the hypothesis of Avogadro; atomic weight and molecular weight; chemical formulæ and nomenclature; valency; the distinction between metals and non-metals.

(γ) The general characters of the non-metals; the chief methods of preparation and the typical reactions of the following non-metallic elements and compounds:—Hydrogen, oxygen, ozone, water, peroxide of hydrogen; chlorine, bromine, and iodine, and their compounds with hydrogen and oxygen; fluorine, hydrofluoric acid; nitrogen, ammonia, the oxides of nitrogen, nitrous acid, nitric acid; sulphur, sulphuretted hydrogen, sulphurous and sulphuric anhydrides and acids, thiosulphuric acid; phosphorus, phosphine, the oxides and oxy-acids of phosphorus, the chlorides of phosphorus; silicon, silica, fluoride of silicon, silicofluoric acid; boron, boric acid. The usual impurities in those of the above-named substances that are included in the British Pharmacopœia.

(δ) The general characters and classification of the metals, and the general methods of forming oxides and salts; the sources, the usual methods of extracting, and the chief properties of, the under-mentioned metals, and the principal modes of preparation, properties, adulterations and contaminations of such of their compounds as are described in the British Pharmacopœia,—potassium, sodium, ammonium lithium, barium, calcium, magnesium, zinc, aluminium, iron, chromium, manganese, arsenium, antimony, tin, copper, bismuth, lead, silver, mercury, gold, and platinum.

(ϵ) Carbon, its oxides, cyanogen, hydrocyanic acid, cyanide of potassium, ferrocyanide and ferricyanide of potassium, oxalic acid. The chief methods of preparing marsh gas, ethylene, alcohol, aldehyde, acetic acid, acetate of ethyl, spirit of nitrous ether, nitrite of amyl, hydrate of chloral, chloroform, iodoform, ether; the principal properties, reactions, and mutual relations of these compounds. The candidate will also be expected to possess a general knowledge of the methods of estimating carbon, hydrogen, oxygen, and nitrogen in organic compounds, and of obtaining molecular formulæ.

Note.—Candidates will be expected to solve simple problems relating to the weight and volume, under different conditions of temperature and pressure, of elements and compounds concerned in chemical reactions.

CHEMISTRY.—PRACTICAL EXAMINATION.

To determine the specific gravity of liquids and solids, to be familiar with the general construction and use of the thermometer and barometer.

To recognise by chemical tests the more important non-metallic elements and compounds, as well as the metals and salts indicated in the foregoing list; to detect the chief impurities in those that are included in the British Pharmacopœia; to recognise by their physical properties those which possess well-defined charcteristics.

To identify by chemical tests the organic compounds before enumerated, and in addition tartaric and citric acids, starch, cane sugar, grape sugar, salicin, quinine, morphine, and strychnine; and to detect the impurities in such as are included in the British Pharmacopœia.

To perform those volumetric determinations which are described in the British Pharmacopœia.

To be familiar with the construction and use of the balance, and to have a practical knowledge of the British and metric systems of weights and measures.

To quantitatively determine the total alkaloids in cinchona bark, and in the tincture and extract of nux vomica, and the morphine in opium.

The candidate will further be expected to have a practical acquaintance with the methods of preparing the more important inorganic substances, including the non-metals and their compounds, and such metallic compounds as are included in the British Pharmacopœia, and also the following organic compounds:—ether, chloroform, spirit of nitrous ether, nitrite of amyl, acetate of ethyl, and hydrocyanic acid, so that he may be able to explain to the examiner the operations involved in their preparation, and, if called upon, to perform the operations or certain stages of them himself.

BOTANY.

The candidate will be required to recognise any of the plants specified in the list appended to this schedule; to refer any flowers that may be shown to him to their class and sub-class; to possess a general knowledge of the internal structure of stems, leaves, and roots, and their parts, and of the elementary tissues of which they are composed; to describe a cell, its structure and usual contents; to explain the thickening of cell-walls, and to describe the manner in which cells are combined to form tissues. To distinguish between roots and stems, and to name such important modifications of either as present distinguishing characteristics. To name correctly such leaf shapes as are shown, and to recognise appendages or any important modifications of the leaf. To have a practical knowledge of the various arrangements of leaves or flowers in the bud, and of the different kinds of phyllotaxis and of inflorescence; to understand the principles of branching, and the different kinds of branch systems. To possess a general knowledge of the processes of reproduction of plants, and to describe those of phanerogams and ferns. To name and describe the arrangements of the parts of the flower, the number, position and shape of the floral envelopes and of the organs of reproduction; to name and describe the different kinds of fruits, and the various modes of dehiscence and kinds of placentation. To have a general knowledge of the physiology of plants, and to describe the functions of the roots, stems and leaves. To be acquainted with the materials which form the food of plants, and to understand the part played by starch, sugar, and aleurone grains in the life of the plant. To recognise, by means of the microscope, sections of stems of dicotyledonous, monocotyledonous and cryptogamic plants; spiral, reticulated and scalariform vessels; as well as the simpler structures, such as stomata, pollen grains, and hairs.

List of Plants for Recognition.

Aconitum napellus	Valeriana officinalis	Mentha viridis
Papaver rhœas	Achillea millefolium	,, Pulegium
,, somniferum	Anthemis nobilis	Rosmarinus officinalis
Brassica alba	Matricaria chamomilla	Daphne laureola
Cochlearia armoracia	Taraxacum officinale	,, mezereum
Althæa officinalis	Menyanthes trifoliata	Juniperus sabina
Ruta graveolens	Borago officinalis	Taxus baccata
Cytisus scoparius	Atropa belladonna	Colchicum autumnale
Rosa canina	Datura stramonium	Arum maculatum
Bryonia dioica	Hyoscyamus niger	Avena sativa
Æthusa cynapium	Solanum dulcamara	Hordeum vulgare
Conium maculatum	Digitalis purpurea	Triticum sativum
Fœniculum capillaceum	Lavandula vera	Aspidium filix-mas
Œnanthe crocata	Mentha piperita	

MATERIA MEDICA.

The candidate is required to recognise specimens of any crude drug mentioned in the British Pharmacopœia or in the annexed list, and to describe their methods of production and their characteristics so far as may be necessary to detect adulteration or substitution. He must be familiar with their geographical sources, the botanical and zoological names of the plants and animals yielding them, the natural orders to which they belong, and the localities from which they are obtained. The candidate will be required to name their chief active constituents and also the official preparations into which they enter.

Roots.
Althæa officinalis
Inula helenium
Alkanna tinctoria
Bryonia alba et dioica

Rhizomes, etc.
Helleborus niger
Sanguinaria canadensis
Iris florentina
Allium sativum
Veratrum album
Acorus calamus
Agropyron (Triticum) repens

Barks.
Berberis vulgaris
Cinnamodendron corticosum
Simaruba amara
Erythrophlæum guineense
Quillaia saponaria
Prunus serotina
Ulmus campestris
Ulmus fulva
Cinnamomum cassia
Coto

Herbs.
Grindelia squarrosa et robusta
Tussilago farfara
Spigelia marilandica
Marrubium vulgare
Solanum dulcamara
Euphorbia pilulifera
Convallaria majalis

Flowers.
Calendula officinalis
Pyrethrum cinerariæfolium, etc.
Arnica montana

Fruits.
Punica granatum
Cuminum cyminum
Capsicum annuum
Laurus nobilis
Piper longum
Vanilla planifolia

Seeds.
Paullinia sorbilis (Guarana)
Trigonella fœnum-græcum
Dipteryx odorata
Pyrus cydonia
Strychnos amara
Hyoscyamus niger
Amomum melegueta
Areca catechu

Hairs.
Mucuna pruriens

Juices, etc.
Acacia catechu
Lactuca virosa (Lactucarium)
Aloe spicata, etc.
Curare (Woorari)

Gum-Resins.
Boswellia carterii, etc.
Euphorbia resinifera

Oleoresins.
Pistacia terebinthus

Resins.
Callitris quadrivalvis
Pinites succinifer
Calamus draco

Cryptogamic Substances.
Lycopodium clavatum, etc.
Fucus vesiculosus
Chondrus crispus

Animal Substances.
Spongia officinalis
Coccus lacca
Mylabris cichorii
Sepia officinalis
Castor fiber

PRESCRIPTIONS.

The candidate is required to read without abbreviation autograph prescriptions; translate them into English; understand the grammatical construction of the Latin; and render a literal as well as an appropriate translation of the directions for use. To detect errors, discover unusual doses, and have a general knowledge of posology. To calculate percentages and other quantities occurring in prescriptions; also to render in good Latin ordinary prescriptions written in English.

PRACTICAL DISPENSING.

To weigh, measure, and compound medicines; write the directions in concise language in a neat and distinct hand; to finish and properly direct each package. In awarding marks in this subject the time taken by the candidate in doing the work is taken into account.

PHARMACY.

The candidate will be required to possess a general knowledge of the following branches:—

(*a*) Operations requiring the use of heat. Evaporation, with particular reference to the preparation of extracts and inspissated juices; special characters and modes of preparing the various classes of extracts; influence on surface, temperature and pressure upon the rate of evaporation; water, steam, and sand baths; distillation, ordinary, fractional, and destructive, distinctive characters and objects of each; official preparations illustrating the various kinds of distillation, apparatus employed, the retort and receiver, still and worm, Liebig's condenser, principles on which they are constructed and used. Sublimation; its objects and applications in pharmacy; official products of sublimation, calcination, and fusion. Desiccation; temperature best suited for drying particular drugs, loss in drying vegetable drugs, forms of drying ovens, principles on which they are constructed and used.

(*β*) Disintegration of solid substances: cutting, bruising, and pulverisation; apparatus employed, principles indicating which is to be adopted in particular instances; methods for controlling the degree of comminution, sieves and sifting, trituration, levigation, elutriation, granulation, including methods for producing certain chemicals as fine powders, small crystals, scales, etc. Solution: its nature, solvent power of various menstrua, influences of (*a*) temperature; (*b*) state of division of the substance to be dissolved; (*c*) time; (*d*) position of the substance in the menstruum; lixiviation, infusion, digestion, and decoction; maceration, percolation, and displacement, principles on which the successful performance of these processes depends; form and materials for percolators and other vessels employed. Filtration, objects and methods, filtering media, means of expediting filtration; dialysis: its application in pharmacy, construction and use of the dialyser. Expression; methods of obtaining the juices from plants; recovery of the residual liquids from tincture marcs, etc., screw, hydraulic, and other presses. The principles involved in the dispensing of medicines, particularly with reference to the best excipients and methods for forming pill masses, the preparation and nature of emulsions, the most suitable emulsifying agents, and the best means of suspending insoluble substances in liquids.

(*γ*) The candidate will also be required to show a practical knowledge of the processes, and understand the principles of the processes by which the official preparations belonging to the following classes are made, viz., collodions, confections, decoctions, dilute acids, extracts (solid and liquid), glycerines, infusions, juices, liniments, lotions, mixtures, ointments, pill masses, plasters, powders (simple and compound), solutions, spirits, suppositories, syrups, tinctures, vinegars, waters, and wines. He must be able to conduct such of the operations, or parts of them, as may be required by the examiner. A knowledge of the proportion of active ingredient or crude material in official preparations containing aconite, antimony, arsenic, belladonna, Calabar bean, cantharides, hydrate of chloral, chloroform, caustic potash and soda, colchicum, digitalis, elaterinum, ergot, iodine, iodoform, ipecacuanha, lead, mercury, nux vomica, opium, phosphorus, scammony, stramonium squill, alkaloids, and alkaloidal salts.

POISON LAW.

Candidates will be required to enumerate the poisons contained in Schedule A of the Pharmacy Act, 1868, and those since added thereto, in pursuance of the provision contained in Section II. of that Act, viz.:—

(*a*) Poisons within Part I. of the Schedule.
(*b*) Poisons within Part II. of the Schedule.

They will be required to describe minutely the conditions required upon the sale by retail of poisons, both in Part I. and Part II. of Schedule A; and to write the proper entry required, according to Schedule F of the Act, for the sale of a poison coming within Part I. of Schedule A. They will also be required to state the conditions imposed on the sale of scheduled poisons by wholesale and for export; and upon the sale of a scheduled poison when forming an ingredient in a medicine dispensed. A knowledge of the conditions imposed on the sale of arsenic by the Arsenic Act will also be required.

"POST-GRADUATE" STUDY.

If, unfortunately, failure should attend the candidate's venture, he should immediately set to work to perfect his knowledge, and present himself again three or six months later, when a reduced fee (£3 3*s*.) will be payable. Success will, however, be rendered a practical certainty in the first instance, if the course of study that has been outlined be faithfully followed. After passing the Minor examination the newly-fledged chemist and druggist may seek further experience as an assistant or at once commence business on his own account, but it is better to proceed forthwith to study for the higher qualification. Not less than six months should be devoted to this purpose, and that preferably at a high-class school. Having passed, the successful examinee is entitled to registration as a pharmaceutical chemist, and his use of this or similar titles is fully protected by law. Another advantage is that pharmaceutical chemists are exempt in England and Wales from service on all juries and inquests, under the Juries Act, 1862. They are also eligible for election as Members of the Pharmaceutical Society, and as such entitled to participate in its privileges to the fullest extent. The details of the examination are here given.

MAJOR EXAMINATION SYLLABUS.

The examination in the respective subjects may be oral, practical, or in writing. The fee is three guineas.

CHEMISTRY AND PHYSICS.

In addition to the subjects indicated by the Schedule for the Minor examination the candidate will be expected to possess a knowledge of the most important facts connected with—

1. The physical constitution of the three states of matter; liquefaction of gases, critical point; the diffusion of gases and liquids, dialysis; methods for determining vapour densities; solution.

2. The dynamical theory of heat; heat and temperature; sources, development and propagation of heat; radiation, diathermancy and athermancy, separation of heat from light; latent heat; boiling point, distillation; freezing mixtures; specific heat; calorimeters; relation of specific heat to atomic weight; thermometers, the air thermometer; methods of determining exceedingly high and low temperatures.

3. The undulatory theory of light; reflection, refraction; propagation of light, the photometer; mirrors and lenses, the microscope; decomposition of white light by a prism; the spectroscope, spectrum analysis; double refraction; polarisation, the polariscope; influence of light in promoting chemical change, the principles of the ordinary photographic processes.

4. The methods of producing magnetism; magnetic induction. Sources of electricity, frictional electricity; the electroscope; electric induction; electric machines; the Leyden jar; voltaic electricity; the principal forms of voltaic batteries; the galvanometer; chemical effects of current; electrolysis; measurement of current, Ohm's law; voltameter; secondary currents, secondary batteries thermo electricity, the thermopile; production of heat and light from electricity; electromotors; dynamo-machines.

5. The history of the atomic theory; the hypothesis of Avogadro; the methods by which the standard atomic weights have been determined; dissociation; specific volume; the periodic law.

6. Classification of carbon compounds; rational formulæ; isomerism. The characteristics and constitution of the chief typical organic compounds. The constitution, sources, methods of preparation, properties, reactions and mutual relations of the following organic compounds; *Cyanogen derivatives.*—Urea, cyanuric acid, uric acid. *Hydrocarbons.*—The principal members of the paraffin, olefine, acetylene and benzene series; their chief haloid and nitro-derivatives Theory of isomerism in paraffin and benzene series. *Paraffin derivatives.*—Distinction of primary, secondary and tertiary alcohols; the chief primary monohydric alcohols; glycol; glycerine (glycerol); mannite; acetaldehyde, chloral; chloral hydrate; acetone; ether; the principal acids of the acetic series; oleic acid; glycollic and lactic acids; oxalic, succinic, malic, tartaric, racemic and citric acids; ethylamine; acetamide; glycocine; cane sugar; grape sugar; milk sugar; maltose; starch and cellulose. *Benzene derivatives.*—Phenol sulphonic acid; phenol; resorcin (resorcinol); aniline; benzaldehyde; salicylaldehyde; benzoic acid; salicylic acid. The principal properties of the terpenes and camphors, essential oils, resins. The characteristics of naphthalene and its derivatives. The processes of alcoholic, acetic, lactic, and ammonic fermentation. The properties and decomposition products of the principal glucosides alkaloids, and other substances of definite chemical composition in the British Pharmacopœia.

CHEMISTRY.—PRACTICAL EXAMINATION.

The candidate will be expected to be able—

To analyse mixtures containing three metallic salts; to estimate the nitrogen in organic compounds by the soda-lime process; to determine melting and boiling points. To perform the operations (or certain stages of them) necessary for the preparation of cyanogen, artificial urea, ethyl chloride, iodoform, ethylene, ethylene dibromide, acetaldehyde, formic acid, oxalic acid, nitrobenzene, aniline, benzoic acid, the nitrophenols. To recognise by their chemical reactions, and to determine, where necessary, by the Pharmacopœial gravimetric or volumetric methods, the strength and purity of the most important of the inorganic and organic compounds (including crude drugs and galenical preparations) described in the British Pharmacopœia. To detect and separate the most important alkaloids, alkaloidal salts and glucosides, and to separate in the pure state morphine from opium, and strychnine from nux vomica.

In the practical portion of the Major examination standard works of reference are provided for the use of candidates, at the discretion of the examiner. No other books or memoranda are allowed.

BOTANY.

In addition to what is required for the Minor, the candidate is expected to possess an intimate acquaintance with the parts of the flower, fruit and seed; to describe the structure and development of the pollen and of the ovule, and to trace the steps by which the latter is transformed into the seed. To have an intimate knowledge of the structure of cells, whether isolated or in combination, to form tissues; of the contents of cells in their various stages of development; and a general knowledge of the origin of gums, acids, and mineral and other secretions of plants. To be familiar with the composition of the cell wall, its chemical nature, properties and reactions; with the changes it undergoes in the formation of wood, cork, and mucilage, and in the processes of thickening and cuticularisation. To possess a knowledge of the general principles of classification, the system of Linnæus, and of the natural system founded upon that of De Candolle. To be able to distinguish practically the natural orders included in the schedule appended below, and such of the leading genera of each of these orders as are therein specified; also to refer to their respective orders or genera such specimens included in the schedule as may be shown to him. To possess a general knowledge of the method of reproduction in cryptogams, and to describe that of mosses; to be familiar with the development of the spores in these plants, and to be able to compare the different organs with the corresponding organs in phanerogams; to possess a knowledge of the alternation of generations in the cryptogams, and the modifications under which this is represented in the phanerogams. To have a practical acquaintance with the use of the microscope, and by means of it to recognise the various tissues found in the plant, the reproductive organs of cryptogams and phanerogams, and the more important cell contents.

Schedule.

RANUNCULACEÆ	Potentilla	GENTIANACEÆ	EUPHORBIACEÆ
Anemone	Rosa	Erythræa	Euphorbia
Helleborus	Pyrus	Menyanthes	Buxus
Aconitum	CUCURBITACEÆ	CONVOLVULACEÆ	CUPULIFERÆ
PAPAVERACEÆ	Ecballium	SOLANACEÆ	Fagus
Papaver	Bryonia	Solanum	Quercus
Chelidonium	UMBELLIFERÆ	Physalis	Corylus
CRUCIFERÆ	Eryngium	Atropa	SALICACEÆ
Brassica	Cicuta	Hyoscyamus	Salix
Cochlearia	Carum	Datura	BETULACEÆ
VIOLACEÆ	Œnanthe	SCROPHULARIACEÆ	Alnus
Viola	Fœniculum	Verbascum	CONIFERÆ
MALVACEÆ	Daucus	Scrophularia	Juniperus
Malva	Conium	Digitalis	Pinus
RUTACEÆ	Coriandrum	LABIATÆ	ORCHIDACEÆ
Ruta	DIPSACEÆ	Mentha	AMARYLLIDACEÆ
LEGUMINOSÆ	COMPOSITÆ	Origanum	IRIDACEÆ
Lathyrus	Tussilago	Thymus	Iris
Mimosa	Inula	Lamium	Crocus
Cercis	Matricaria	Marrubium	LILIACEÆ
ROSACEÆ	Anthemis	POLYGONACEÆ	Convallaria
Prunus	Cichorium	Polygonum	Ruscus
Spiræa	Lactuca	Rumex	Allium
			GRAMINEÆ

MATERIA MEDICA.

This comprises a practical knowledge of the methods of estimating the value of important drugs, of distinguishing commercial varieties of the same, and of separating such of their active principles as are official in the British Pharmacopœia.

The candidate is also expected to have a general acquaintance with the active constituents of all important drugs, and to possess a general knowledge of the chemical properties of the official alkaloids, glucosides, resins, and essential and fixed oils.

The microscope will be introduced for the examination of certain drugs.

HOW TO BECOME QUALIFIED IN IRELAND.

Great Britain and Ireland have distinct Pharmacy Acts, and their examination regulations differ in some respects. Thus the syllabus of the Irish Preliminary examination is much more extensive, but on the other hand, that of the qualifying examination—the passing of which entitles the candidate to style himself "pharmaceutical chemist"—is not so comprehensive as that of the British "Minor." Moreover, it does not appear that the standard of proficiency required is so high in Ireland as in Great Britain.

PRELIMINARY EXAMINATION.

The Preliminary Examination of the Pharmaceutical Society of Ireland is held on the first Monday of January, April, July, and October. The following are the compulsory subjects:—

LATIN.—To translate into English, and parse sentences from a Latin author:—Cæsar's 'Commentaries,' First Book; or Virgil's 'Æneid,' First Book.

ENGLISH.—English grammar, including orthography and parsing. To write on a subject selected by the Examiner, and to write from dictation.

ARITHMETIC.—The first four rules, simple proportion, vulgar fractions, and decimals. To describe the British weights and measures, and the metric system.

ALGEBRA.—As far as simple equations, inclusive.

GEOMETRY.—Including the first book of Euclid.

In addition candidates must pass in one of the following optional subjects:—

ELEMENTARY PHYSICS AND MECHANICS.—Sound, light, and heat, as given in Ganot's 'Elementary Course of Natural Philosopy'; mechanics of solids and fluids, comprising the elements of statics, dynamics, and hydrostatics.

THE RUDIMENTS OF BOTANY.—Oliver's 'Lessons in Elementary Botany.' Part I.

ELEMENTARY CHEMISTRY.—As included in Roscoe's 'Lessons in Elementary Chemistry,' chapters 1 to 13 inclusive.

FRENCH, GERMAN, or any other modern language.

As in the case of the British Preliminary, certificates of certain other examining bodies are accepted in lieu of this examination.

The fee for this examination is £2 2*s*, which should be lodged in the Bank of Ireland to the credit of the Pharmaceutical Society of Ireland, and the receipt sent with the candidate's application to the Registrar, at the Society's office, 67, Lower Mount Street, Dublin, not later than the Monday fortnight preceding the day of examination. The optional subject selected should be stated, and the application be accompanied by a certificate of birth. A candidate who has failed to pass is at liberty to present himself for re-examination six months later on payment of 10*s*. 6*d*.

ASSISTANTS' CERTIFICATES.

These certificates are granted on passing the Preliminary or its equivalent and a special examination in the following subjects :—

PRESCRIPTIONS.—Candidates will be required to read autograph prescriptions, translate them into English, render a correct translation of the directions for use, and detect unusual doses.

PRACTICAL DISPENSING.—To weigh, measure, and compound medicines, write the directions in suitable language, finish and properly direct each package.

MATERIA MEDICA AND QUALITY OF SPECIMENS.—To recognise the Pharmacopœia chemicals in frequent demand, and specimens of roots, barks, leaves, fruits, resins and gums, in ordinary use; also to estimate the quality of each specimen submitted, and its freedom from adulteration.

PHARMACY.—To recognise the preparations of the Pharmacopœia which are not of a definite chemical nature, such as extracts, tinctures, and powders, and give the proportions of the more active ingredients. The candidates will also be examined in the Sale of Poisons (Ireland) Act.

Rejected candidates may present themselves again after a lapse of six months, on payment of 10*s.* 6*d.* A necessary condition in the case of all candidates is that they must have been engaged for four years in an open pharmacy kept (*a*) by a pharmaceutical chemist or an apothecary in Ireland, or (*b*) by a pharmaceutical chemist or chemist and druggist in Great Britain, or (*c*) he may have served two years in a registered druggist's or chemist and druggist's shop in Ireland, and two years subsequently in an open pharmacy.

THE PHARMACEUTICAL LICENCE.

If, besides complying with all the conditions for the assistant's examination, the candidate has attained the age of twenty-one years, passed the Preliminary not less than twelve months previously, and attended a course in practical chemistry of not less than three months' duration, including 100 hours practical work at the bench, and a course in botany and materia medica, he will have fulfilled all the conditions imposed on those who seek to pass the final examination and acquire the right to term themselves "pharmaceutical chemist." This qualification is practically equivalent to the British "chemist and druggist," but the holder has an advantage over the latter, as he enjoys a monopoly in compounding medical prescriptions.

The following are the examination subjects :—

BOTANY.—To recognise the principal indigenous plants used in medicine, to refer them to their natural orders, and to give the definitions and the distinctive characters of their several parts.

MATERIA MEDICA.—To recognise specimens of the drugs of the Pharmacopœia, to describe their characters and active principles, name the sources from which they are obtained, and the official preparations into which they enter; and to detect adulterations.

GENERAL AND PHARMACEUTICAL CHEMISTRY.—The elementary laws of chemistry and physics, including chemical equations. To recognise the chemical substances of the Pharmacopœia; to describe the processes by which they are obtained; qualitative analysis (including the tests of the Pharmacopœia) and volumetric analysis; and to submit to a practical examination in those subjects.

PRACTICAL PHARMACY.—To translate Latin prescriptions; to detect dangerous doses; to compound and dispense correctly; to explain the processes of making the non-chemical preparations of the Pharmacopœia, and to recognise them; and to have an intimate knowledge of the Sale of Poisons (Ireland) Act, 33 and 34 Vict. chap. 26, 1870.

A clear fortnight's notice must be given to the Registrar, the fee of £5 5*s.* being also paid, and proofs submitted that the candidate has fulfilled the different requirements of the Society. He will then be summoned in due course to attend the examinations, which are held at Dublin on the second Wednesday and following days of January, April, July, and October, commencing at 11 a.m. If unsuccessful, the candidate can try again after the lapse of six months on payment of £1 11*s.* 6*d.*

REGISTERED DRUGGISTS.

The qualification of "registered druggist" is acquired by passing an examination testing the candidate's knowledge of English orthography and composition, arithmetic, the weights and measures of the British Pharmacopœia, the appearance and properties of the various drugs and chemicals in general use, and the Irish Poisons Act. The candidate must previously have served a four years' apprenticeship with a pharmaceutical chemist, licentiate, apothecary, registered chemist and druggist, or registered druggist. The examination fee is £2 2*s.*, and there is a registration fee of the same amount. Registered druggists may sell poisons, but are not entitled to compound medical prescriptions.

Further particulars respecting the Irish examinations, etc., are published in the Society's Calendar (1*s.* 8½*d.*, post free), which can be obtained from the Registrar, 67, Lower Mount Street, Dublin.

NEW IDEAS.

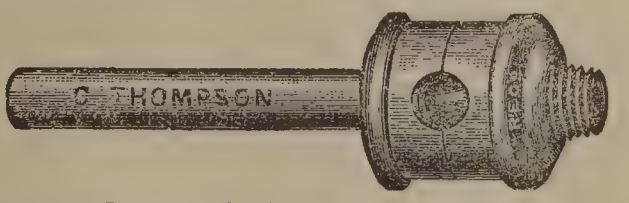
[Inventors and manufacturers are invited to submit specimens of novelties, descriptive notices of which will be inserted for the information of readers of the Journal. Whenever possible, illustrative blocks adapted to the width of the Journal columns should accompany the particulars sent. Address: Editorial Department, 17, Bloomsbury Square, W.C.]

MOSS AND CO.'S BEEF JUICE.

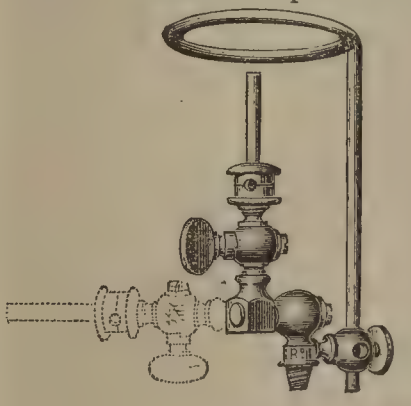
Messrs. JOHN MOSS AND CO., Galen Works, New Cross, S.E., have devoted considerable attention to the manufacture of high-class dietetic products, one of the results of which is a beef juice to which our attention was recently drawn. This preparation possesses all the characteristics which should belong to a superior fluid beef, without the disagreeable features which are frequently present. In the first place, the proportion of soluble meat constituents is unusually high, it is pleasant to the taste, the raw meat flavour being effectively masked by the salt used as a preservative, and it mixes freely with water. It is claimed on its behalf that one fluid ounce of the preparation contains the whole of the nutritive and stimulating constituents of twenty-four ounces of the choicest lean beef. Analysis of the sample submitted showed that it contained nearly 40 per cent. of solid material, of which 5 per cent. was coagulated when the preparation was heated, whilst the proportion of meat extractives present was found to be 18·5 per cent., and saline constituents, 11·8 per cent., which included the salt used as a preservative, no boracic acid or chloroform being present in the preparation. These results show that Moss's beef juice is one which a chemist can confidently recommend to his customers as a reliable preparation at a reasonable price. It can be supplied labelled with retailer's name and address.

THOMPSON'S ATMOSPHERIC GAS JET.

This useful little burner, the invention of Mr. C. THOMPSON pharmaceutical chemist, Sparkbrook, Birmingham, has been on the market for some time, and proved a great success, but its production in a simpler and cheaper form fully justifies further reference to it It is now made in polished brass at 1*s.*, or nickel-plated 1*s.* 6*d.*



It is represented exact size in the block, and will fit where any ordinary burner has been. On excluding air an ordinary illuminating flame is obtained, a partial supply of air produces a Bunsen flame, and a full supply of air gives a powerful blowpipe flame, useful for soldering, brazing, igniting precipitates, or melting refractory substances. Sealing-wax melts instantly in this flame, without the least trace of blackening, and a seal leaves a much better impression than can be obtained with an ordinary gas jet. The second illustration represents the jet fitted with a tap, swivel, and ring support, together with a taper thread for fitting into existing fittings. Thompson's Registered Gas Bracket is a more complete form still, being intended for attachment to a wall or counter. A number of them are being fixed in the dispensary at the School of Pharmacy, Bloomsbury Square, as they have been proved after prolonged trial to be the most convenient gas appliances for the dispensing counter.



ROBINSON'S DRESSING AND TISSUE.

Cellulose wadding is probably the best and most inexpensive simple absorbent material on the market. Whilst it holds only 23 times its weight of water as against absorbent wool, 25 times (wood wool wadding, 15; wood wool, 10 6; gauze, 9 6; and turf moss, 8·2), it possesses over 50 per cent. greater power of diffusion than absorbent wool, and is also very superior to any other material in this respect, being therefore by far the most absorbent substance known. When

saturated, however, it becomes soft, contracts, and forms a soft pulp; whereas absorbent cotton retains its elasticity. But the two combined were found to make a perfect dressing, and for this a provisional patent has been granted to Messrs. ROBINSON AND SONS, LTD., of Chesterfield. It consists of absorbent cotton and cellulose wadding in alternate layers, and is specially suitable for general surgical purposes, since it combines the great diffusive power of cellulose wadding with the equally great absorptive power of cotton-wool. The chief effect of the combination is that after being saturated with liquid the dressing remains elastic and soft, and can be dried in exactly the same manner as cotton-wool. The new dressing costs no more than plain cellulose wadding, is non-irritating, is exceptionally absorbent, and much more economical in use than other surgical dressings, owing to its property of diffusion. Thus one pound of "Robinson's Dressing" is said to do the work of two pounds of ordinary absorbent wool. The new dressing is sterilised in the course of manufacture, and its antisepticity maintained by treatment with mercuric chloride (1 in 4000), but a plain dressing can be supplied if required. It is also prepared with gauze on one or both sides, and in that form is known as "Robinson's Tissue." This is a beautiful absorptive material, and should specially commend itself for accouchement sheets, sanitary pads, etc., etc.

MICROSCOPIC OBJECTS FOR STUDENTS.

Better mounted objects than those prepared by Mr. ERNEST HINTON are hardly conceivable, assuming that the specimens he has submitted for examination fairly represent his stock, as no doubt they do. The slides we have examined are:—

Ovary of Tulip, T.S.	Stem of Black Poplar, T.S.
Stem of Scotch Fir, T.S.	Compound Spiral Vessels (Banana).
Petiole of Curled Dock, T.S.	Cystoliths in Leaf of Ficus.

Most of the specimens are double stained, the stains being clear and definite, thus assisting the student rather than confusing him, as is sometimes the case. Special sets of a dozen or more slides can be supplied to meet the requirements of pharmaceutical students. The slides are specially prepared for educational purposes, and students cannot do better than procure sets to illustrate typical structures. For, whilst it is useless to expect to acquire a satisfactory practical acquaintance with the details of vegetable histology by the mere study of mounted objects not prepared by one's self, the value for reference purposes of authentic and carefully prepared type specimens such as these is very great. In addition to supplying educational and other slides, Mr. Hinton is prepared to mount specimens to order from an investigator's own material. Price lists and further particulars will be furnished on application to 12, Vorley Road, Upper Holloway, London, N.

POCKET CALENDARS FOR 1897.

The first suggestion that the year is swiftly nearing its close is usually given by the receipt of specimen calendars for the following year, and already more than three months before Christmas, Messrs. FORD, SHAPLAND AND CO., 6, Great Turnstile, High Holborn, W.C., send some pretty reminders that everyone is growing older. There is a dainty little calendar for the purse, containing ruled pages for memoranda and notes of engagements, together with postal information, etc., and four pages for the chemist's advertisements. A handy folding card calendar seems just the thing for the waistcoat pocket; and more elaborate, though equally compact, styles with handsome floral designs on the covers appeal specially to ladies. Readers are advised to send for specimens.

NEW MEDICATED WINES.

The use of medicated wines appears to be extending, and it is not surprising, therefore, to find new claimants for public favour coming forward from time to time. Two of the most recent, prepared by Messrs. WM. GLENDENNING AND SONS, Newcastle-on-Tyne, were exhibited at the recent Chemists' Exhibition. Their Beef and Malt Wine is not unfairly described as a scientific combination of Mosquera Beef Jelly, Kepler Extract of Malt and Old Alto-Douro Port Wine. These are all valuable constituents, and the combination constitutes an extremely palatable form of easily digested nourishment. The Glendenning Coca Wine is also a very elegant preparation, having a pronounced, but not objectionable, coca flavour, and being apparently prepared with a wine of good quality. Both preparations seem as well adapted to meet public wants in the shape of medicated wines as any similar preparations that have come under our notice, the wines used in both cases being especially worthy of commendation, as being much superior to the articles sometimes used for similar preparations.

A HOME LABORATORY FOR STUDENTS.

In last year's Students' Number of the Journal an article was published under the title "How to Fit up a Small Laboratory." Particulars have recently been supplied of convenient sets of apparatus and reagents, offered by Mr. J. PRESTON, chemical apparatus dealer, Sheffield, the purchase of which saves the trouble of deciding what to have and selecting items one by one from price lists. A very useful set of apparatus is supplied for 25*s*., and a set of reagents in stoppered bottles for 20*s*., or the complete set of apparatus and reagents for £2 2*s*. Students intending to fit up home laboratories or requiring special sets of apparatus for college use should consult this list before purchasing.

"EXCEL" STERILISED MILK.

It has long been acknowledged that milk as supplied under the present system is a fruitful source of the dissemination of contagious disease germs, and the experience of many medical officers of health is in favour of sterilisation of milk under any circumstances, but more particularly in large towns and cities. It is therefore satisfactory to learn that it is now possible for anyone in London to obtain a regular supply of sterilised milk at the same price as that of the best ordinary raw milk, the "EXCEL" STERILISED MILK CO. being prepared to supply English milk, sterilised and hermetically sealed in clear glass bottles, in its original state of purity, without any addition of chemicals, sugar, preservatives, or colouring matter, and without any abstraction of the original cream. In appearance and chemical composition, "Excel" sterilised milk is not to be distinguished from ordinary new milk, and it is extensively used by the Union Steamship Company and other lines of steamships. It is also in regular use at St. Bartholomew's Hospital and other similar institutions, whilst it is largely used and prescribed by many of the leading physicians in London. Samples supplied by the proprietors fully confirm all they claim for the milk, and chemists ought to find it worth their while to supply the article.

SOMATOSE.

The preparation introduced under this name by Messrs. BAYER AND CO., of Elberfeld, is a light, almost colourless, powder. It consists chiefly of albumose, soluble in water, and containing the alkaline phosphates of flesh. It is quite free from the obnoxious, bitter taste of some peptone preparations, and has been found very useful in promoting the secretion of milk by nursing mothers. In artificial feeding the condensed form and ready assimilation of Somatose render it a very advantageous means of nutrition, especially in typhoid fever or disordered conditions of the stomach and intestines. From the results obtained by the use of Somatose in various hospitals in Germany, Belgium, and America very favourable opinions of its value as a nutritive agent have been expressed by several physicians. Somatose is administered in doses of a teaspoonful, three or four times a day, dissolved in warm milk or weak broth.

OVARIINUM SICCUM—E. MERCK.

This preparation consists of the substance of cow's ovaries, freed from fat and dried. Numerous trials have shown that the administration of ovarial substance has a beneficial effect in neurotic affections incident to the menopause, and it is unattended with any prejudicial action. The dose is from 12 to 68 grains of the powder; tablets are also supplied, each containing 1½ grain of the powder. Mainzer has given 15 grains three times a day for three days. When effect was produced the dose was increased to 22 grains three times a day, and on disappearance of the symptoms reduced gradually to 7 or 15 grains.

MEDICATED SOAPS.

The growing demand for medicated soap is well provided for by the preparations manufactured by the firm of CHARLES MIDGLEY, 23, St. Ann's Square, Manchester. These include a sulphur soap with 10 per cent. precipitated sulphur; menthol soap with 2½ per cent. menthol; and a 10 per cent. ichthyol soap, besides others containing birch tar, camphor, naphthol, etc., and mixtures of these ingredients. Medicated soap powders are also supplied by the firm in bottles with screw caps, that are very convenient for use. The purity of the soap base and of the drugs used is guaranteed, as well as thorough uniform incorporation, which is an important point. Emollient bath powders (plain and medicated) packed in bags of different sizes, sufficient for use in two or three baths, are a new device for the preparation of medicated baths. The character of all these articles is excellent, and they are put up in a neat,

attractive manner. These preparations have met with approval by dermatological authorities and the maker is entitled to credit for having done away with the necessity of depending upon Continental manufacturers for the production of such articles.

FANCY PERFUME CASES.

Both elegance and excellence are combined with cheapness in the fancy cases of perfumes which Messrs. John Sanger and Sons have prepared for Christmas trade in great variety, and at prices ranging from sixpence to ten or fifteen shillings each. Most of the bottles are handsomely cut and well stoppered, the cases well made, tastefully designed, and in some instances they are capable of being adapted to future use as handkerchief boxes or trinket cases.

SYPHON COOLER AND DRIP CATCHER.

The Chemists' Aerated and Mineral Waters Association, Limited, appears determined to merit public favour by its attention to trifles as well as to matters of greater importance, as witness the introduction of a simple contrivance which has been protected

by a provisional patent. The Syphon Cooler illustrated above is a tastefully decorated metal cylinder, japanned inside and out. It is fitted inside with springs which securely grip the syphon, and is half an inch larger in diameter than a syphon, so that the drip falls back into the cooler. This simple invention is an invaluable requisite to the table in the sick room and the hospital ward. If a half-pint of cold water or crushed ice be put in the cooler, the contents will be kept refreshingly cool in the hottest weather.

ROSBACH TABLE WATER.

Amongst the more recently introduced table waters, the Rosbach Water, bottled at springs near Homburg, seems destined to take a prominent place in the public favour. This is a well aerated sparkling water of very agreeable taste and great purity. It is bright, sparkling, and effervescent, even when a bottle has been opened some days; it is useful for individuals with rheumatic tendencies; and besides constituting a refreshing beverage when used alone, shows to advantage as a diluent of wines or spirits. The fixed mineral ingredients amount to 126 grains per gallon, and consist chiefly of sodic chloride, calcium and magnesium carbonates, together with a trace of iron salt. As a table water for constant use, Rosbach may be recommended on account of its freedom from organic impurity, and because the alkaline carbonates are not present, as in the case of some other waters, which are on that account more adapted for occasional administration as medicines than for everyday use.

CORRESPONDENCE.

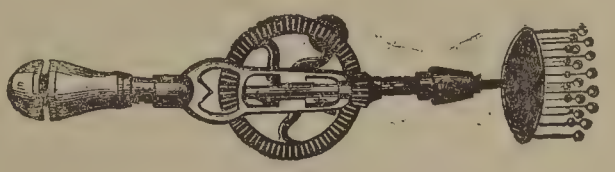
Japanese Fennel.

Sir,—As Mr. J. C. Umney does not appear to have quite grasped the purport of my letter, perhaps you will pardon my asking the indulgence of a little of your valuable space to make the matter a little clearer. In the first place, does Mr. Umney consider that sweet fennel has an odour *sui generis?* or, like the late Professor Maisch, does he consider it to be "anise-like"? In the second place—and this is the question I put in a rather roundabout fashion in my first letter—is he quite assured, in the light of the few facts which I brought together in my letter, that his specimen does not incline in odour in the slightest degree towards that of anise? It was in the hope of eliciting an answer to this question that I ventured to trouble you, and not with the intention of criticising a paper which did not deal with Japanese fennel from the point of view of my letter. Mr. Umney's statement that the odour of the Japanese drug closely resembled that of the European one was sufficiently explicit for his purpose; but if he will kindly expand the statement, and indicate the direction in which the implied variation of odour tended, he may perhaps throw some light upon the varying characteristics of the fennel.

Manchester, September 8, 1896. William Kirkby.

A Simple Pill Coater.

Sir,—Referring to a "new pill coater" shown in your issue of the 22nd ult., I beg to say for the benefit of your readers that if any of them will possess himself of an American hand-drill, an illustration of which is here given, showing how an attachment for holding pills may be affixed, he will not only be able to coat pills, but also to stir emulsions, dry capsules, burnish capsule moulds, drive an air fan, and accomplish other objects too numerous to mention. Pos-



sessing, as I do, between 450 and 500 capsule moulds made by my own hands, this little instrument has been my constant companion when engaged in mechanical work, and when I want any light apparatus to rotate at a high speed I know the drill will do it. For heavier work I use the lathe.

September 1, 1896. D.

Mule Milk.

Sir,—Those of your readers who are interested in the composition of mule's milk may like to compare the results obtained by Mr. W. H. Ince (see page 176) with those recorded by Messrs. Aubert and Colby (*Chemical News*, lxviii., page 168). In this case the mule was eleven years old, fed on oats and hay, and the yield of milk was about two quarts daily. To save the trouble of reference, I append Messrs. Aubert and Colby's figures, which I have placed in juxtaposition with those of Mr. Ince:—

	Specific gravity.	Fat.	Proteids.	Sugar.	Ash.	Total solids.	Authority.
A	1·032	1·86	2·94	—	—	10·65	Aubert and Colby.
B	1·033	1·98	2·31	6·03	0·53	10·86	" "
C	1·028	1·10	2·19	5·50	0·49	9·28	W. H. Ince.

Doubtless other analyses of mule's milk have been made, and if the observers would be good enough to publish their results, they would confer an obligation on many who are desirous of accumulating information on this interesting subject.

Sheffield, September 4, 1896. Alfred H. Allen.

Extraction of Oils.

Sir,—Reference is made in American papers to the extraction of oil by the carbon-disulphide process. Can any reader of the *Pharmaceutical Journal* supply "details" of this process, or give references to reliable works on the subject?

September 4, 1896. Rose Oil.

CHINOSOL DRESSINGS.

Sir,—I am greatly obliged by your very appreciative notice on page 211 of my display of surgical dessings at the Chemists' Exhibition, and shall be glad if you will allow me to make clear a statement therein which reads ambiguously. So far as I know, the "Chinosol" combination has not yet been submitted to Sir Joseph Lister by the patentees, and certainly I do not wish to say that any dressings of it are made under his directions, though most of those shown are correctly so described. Thanking you for this opportunity.

September 5, 1896. JOHN MILNE.

ANSWERS TO QUERIES.

INDIARUBBER IN MEXICO.—Apply to the Director of the Royal Gardens, Kew, on this subject. [*Reply to* "RADIX."]

TURPENTINE AND AMMONIA LINIMENT.—Equal parts of the official liniments of turpentine and of ammonia give a very good white embrocation. [*Reply to* R. B.]

OWNERSHIP OF STOCK.—On the *ex parte* statement of such a complicated case we are unable to advise you. Your proper course is to consult a solicitor. [*Reply to* COSMOS.]

BRISTOL'S SARSAPARILLA.—This is an American preparation. We do not know the maker's address, but Messrs. F. Newbery and Sons, King Edward Street, E.C., are the London agents. [*Reply to* E. HALBROCK]

PRESERVATION OF CORKS.—It is suggested that you may protect the corks somewhat by soaking them for some time in a solution of celloidin in alcohol or acetone, and then drying thoroughly before use. [*Reply to* "A. J. W."]

OPHTHALMIC CRAYONS.—These are made with a basis of 10 parts of glycerin and 20 parts of cocoa butter, or sometimes 10 parts vaseline and 20 parts cocoa butter, according to the nature of the medication. [*Reply to* 'INQUIRO.']

LIST OF POCKET DRESSINGS.—You may be able to obtain such a list as you require from the manufacturers. Try Robinson and Sons, Limited, Wheat Bridge Mil's, Chesterfield; J. F. Macfarlan and Co., Edinburgh; Gibbs, Cuxson and Co., Wednesbury; or John Milne's Antiseptic Dressings Factory, Ladywell, London, S E. [*Reply to* "SALOL."]

ROUP PILLS FOR PIGEONS.—Ammon. carb., 1 grain; pulv. capsici., ¼ grain; pulv. cubeba, 2 grains; balsam copaiba, *q s.* to mass. In addition to these pills brush the bird's throat and nostrils with a feather dipped in eucalyptus oil. Keep in the warm, and sprinkle a few drops of eucalyptus oil in the cage or box. [*Reply to* POST OFFICE.]

PREPARATION OF CINNAMIC ACID.—No details and directions on the points you mention, beyond those quoted in your letter, are given in Claisen's paper (*Berichte*, xiv., 2471). Presumably you have already referred to the article on the subject in Thorpe's 'Dictionary.' By the way, does not the suggestion to employ a water bath convey a fairly definite idea regarding the required temperature? [*Reply to* "F. J. Y."]

FRUIT PRESERVATION.—It is necessary to saturate the air in the containers with chloroform. This may be effected by using glass jars with hollow stoppers and packing the latter with absorbent cotton, upon which the chloroform is poured. After closing the jars, run a little melted wax round the edges of the stoppers to keep the vessels air-tight. Your name is indistinctly written, and perhaps therefore incorrectly printed here. [*Reply to* W. J. THOMAS.]

SHAVING CREAM.—Curd soap, 2 ounces; fresh butter, 4 drachms; tincture of quillaya, 2 ounces; carbonate of potassium, 2 drachms; otto of rose, 10 minims; oil of lavender, 10 minims; oil of myrcia acris, 5 minims. Dissolve the soap, shredded fine, in ten ounces of water by the aid of heat; melt the butter, and mix in a warm mortar with the carbonate of potash dissolved in an ounce of water; gradually add the soap solution, and stir until a paste is formed, then add the quillaya tincture in which the oils have been dissolved. [*Reply to* PHARMAKOS.]

ELECTRIC LIGHT.—It will, we fear, be as difficult to compass your desires as to compress your unwieldy pseudonym into a limited space, for you seem to wish to accomplish what is not feasible. Apply, however, to the House to House Electric Light Supply Company, Ltd., Central Electric Light Station, Richmond Road, S.W., explaining what you wish to do. If your reading lamp is fitted to burn gas, you can apply an incandescent gas-light mantle. [*Reply to* "HONI SOIT QUI MAL Y PENSE."]

LIN. TEREBINTH. B.P.—The preparation of this liniment has been the subject of discussion for the past twenty years, as you will find by referring to the indexes of back volumes. Broadly speaking, all difficulties in preparing it arise from using materials not in accordance with the B.P. standards, or from not closely following the B.P. directions. Test your materials, be careful that you take the exact quantities, and mix as directed in the B.P. With regard to your second query you are treading on dangerous ground if you have anything to do with such cases. Pharmacists often know a great deal, but they should not attempt to give advice on subjects so entirely outside their province. It is really not worth while to compete with the medical columns of low-class weekly newspapers. [*Reply to* "QUÆSTO."]

MUSHROOM KETCHUP.—Mushrooms, 1 peck; salt, 8 ounces. Let the mushrooms be gathered in dry weather, spread a layer out in a deep pan or cask, and sprinkle them with salt; add another layer of mushrooms and more salt alternately; let them stand twelve hours, then break them up with the hand; allow to stand another three days, stirring occasionally, and mashing them well. Then drain and press. To each quart of juice add 2 drachms of powdered capsicum, 4 drachms freshly powdered pimento, 4 drachms freshly powdered ginger, and 30 grains of mace. Heat the whole in a covered stone jar in a water bath for three hours, then allow to cool, well corked up, and let it subside for twenty-four hours; add 8 ounces of rectified spirit to each gallon of liquor, strain, and bottle off into clean scalded bottles, cork up these at once. [*Reply to* CHESHIRE.]

HAIR DYE TO IMPART THREE SHADES OF COLOUR.—It is doubtful if you can get a very satisfactory dye to strike blonde, brown, and black with the same solution; but possibly something on the following lines will suit you:—Silver nitrate, 1 ounce; copper nitrate, 1 drachm; distilled water, 8 ounces; solution of ammonia, *q.s.* Dissolve the salts in the water and then add the ammonia until a clear liquid results. This, applied to the hair undiluted, will give a black dye on exposure to sunlight; more dilute, it gives a brown tint, and still further diluted, a faint chestnut. You must experiment with the degree of dilution upon some white hair. Pyrogallol in 2 per cent. aqueous solution will dye the hair from buff to deep brown, but will not (alone) give a really black tint. Walnut juice also gives different shades of brown even darker than this, and, again, alkaline solutions of extract of logwood will give another series of shades. [*Reply to* "OLEUM LINI."]

OBITUARY.

BETTY.—On August 27, Samuel Chapman Betty, Pharmaceutical Chemist, late of London. Aged 72. Since his retirement from business the deceased had resided at Bognor, Sussex. He took an active part in the proceedings which led to the passing of the Pharmacy Act of 1868, and was for some years a member of the Council of the Pharmaceutical Society. Mr. Betty was an accomplished pharmacist and classical scholar. He took great interest in the promotion of pharmaceutical education, on which subject he delivered an admirable address to the Glasgow Chemists' and Druggists' Association in 1872 (see *Pharm. Journ.* [3], iii., 372).

BROOKS.—On September 1, Henry James Robert Brooks, Chemist and Druggist, of Oxford. Aged 34.

COMMUNICATIONS, LETTERS, ETC., have been received from Messrs. Ainsworth, Allen, Barrat, Bowman, Cocks, Cowie, Forster, Halbrock, Hughes, Jackson, Keen, Kent, Kirkby, Knight, Macdonald, Mackenzie, Merson, Morris, Moss, Proctor, Reynolds, Shuttleworth, Skerry, Thomas, Williams, Yeo.

THE DETERMINATION OF TOTAL ALKALOIDS IN COCA LEAVES.

BY ALEXANDER GUNN, F.C.S.

This investigation was undertaken, in the first instance, to ascertain the cause of the disagreement between the assay of the leaves and that of spirituous preparations thereof, and, secondly, to discover, if possible, a rapid and reliable process for the determination of total alkaloids in the coca leaves. Some of the results obtained are just what one might expect after reading Professor van der Marck's critique* of various processes, and also Dr. Paul's paper on "Cocaine and Its Salts."†

The first thing that would almost naturally occur to one about to determine the alkaloids in, say, a proof spirit percolate of coca would be to get rid of the spirit, or, at all events, most of it. It is not customary, so far as I am aware, to extract alkaloids from strong spirituous preparations with the usual solvents without first considerably reducing the amount of spirit present, and for the everyday requirements of a manufacturing laboratory, where slow methods are avoided as far as possible, heat is really the only means available for the purpose. That being so, the only alternative in the case of coca is to disregard the spirit and to proceed, extracting the alkaloids in the usual way. The experiments embodied in this note have satisfied me that the presence of spirit does not materially affect the results of an analysis, and that heat is quite inadmissible at any stage during the extraction of the alkaloids.

Professor v. d. Marck in his paper criticises the processes published by various authors, and in quoting what he says I will just emphasise the points in the processes immediately concerned with this paper.

Squibb's method is first tried. The leaf (50 grammes) is macerated with 40 grammes of 95 per cent. alcohol and 1·6 grm. HCl. Percolated and the spirit distilled off. Professor v. d. Marck by this process, of which the above is the first step, obtained 0·49 per cent. of alkaloid, and among other objections we find he says, "It is also dangerous to distil a strongly acid alcoholic solution of cocaine, as it so readily decomposes."

He next tries the process of Castaing, in which the leaves are first submitted to treatment with boiling water. The alkaloid obtained by this method amounted to 0·38 per cent.

Then, again, he tries a process by Albertini and Guareschi, in which the leaves are exhausted with ether, the ether distilled off, the residue treated with boiling water, and the solution evaporated to dryness with a little magnesia. Result obtained—0·14 per cent. of alkaloid.

Lastly, Bignon's process is tried. Fifty grammes of the powdered leaf are macerated for forty-eight hours with a 20 per cent. solution of sodium carbonate, then dried on the water bath. The alkaloid obtained in this instance amounted to only 0·06 per cent., a result which he says is "a proof that most of the alkaloid has been decomposed by the strong alkali."

It is satisfactory to find that Prof. Marck condemns these processes, but it is disappointing to see him falling into a similar mistake by basing a process on the following idea:—25 grammes of the powdered leaf is mixed with 10 grammes magnesia, and a little water to damp, then dried on the water bath. His yield of alkaloid in this case was 0·2 per cent., by which result I cannot see that his process is better than the first two he describes. It seems that Marck, in common with those he criticises, instead of trying to estimate the alkaloidal constituents of coca, has been doing his best to decompose them.

Lyon's process, I consider, is one based on sound principles. It consists, as is well known, in digesting the powdered leaf in a mixture of ether, 95, and strong ammonia, 5, for twenty-four hours, and decanting an aliquot part of the ethereal solution for estimation. My chief objection to his process is that it requires twenty-four hours or more to complete it. There is also a certain amount of risk in taking an aliquot part of such a volatile body as ether, especially after it has been allowed to stand for so long. But in careful hands such a risk would of course be more apparent than real. There is no doubt, however, that the extraction of alkaloids by this method is complete.

The experiments undertaken have been done in every case with five grammes of the powdered leaves, as, whilst endeavouring to secure complete exhaustion, my aim has been to keep the operation within reasonable limits both as regards time and material.

I will describe briefly some of the experiments made, as the data may be of use to other workers on the subject, and besides there are many points of interest brought out.

Exp. 1.—5 grammes of the powdered leaves percolated with acetic ether, and 50 C.c. collected. Shaken with acidulated (HCl) water thrice; aqueous acid liquid washed with ether, made alkaline, and finally extracted with three washings of ether. Result, 0·420 per cent.

In the following experiments 5 grammes of powdered leaves are used, and 50 C.c. percolate collected in all cases:—

Exp. 2.—Leaves mixed with calc. magnesia, and damped with water: placed in percolator damp. Percolated with acetic ether. Result, 0·512 per cent.

Exp. 3.—Leaves percolated with ether. Result, 0·176 per cent.

Exp. 4.—Leaves mixed with magnesia, and damped with water. Placed in percolator damp, and percolated with ether. Result, 0·508 per cent.

Exp. 5.—As previous experiment, but the mixture of leaves and magnesia dried at 75° C. Result, 0·236 per cent.

Exp. 6.—As exp. 2, but mixture of leaves and magnesia dried at 75° C. Result, 0·292 per cent.

Exp. 7.—Damped with 2 per cent. solution of ammonia, and allowed to stand half an hour. Percolated with ether. Result, 0·504 per cent.

Exp. 8.—Damped with 2 per cent. solution of ammonia, and dried between 60° and 70° C. Again moistened with ammonia solution, and placed in percolator damp, percolated with ether. Result, 0·460 per cent.

Exp. 9.—Moistened with ammonia solution, placed in percolator damp and percolated with a mixture of ether 4, and chloroform 1. Result, 0·540 per cent.

Exp. 10.—Damped with ammonia solution and percolated with chloroform. Result, 0·408 per cent.

Exp. 11.—Damped with ammonia solution, then percolated with ether which has been shaken with liq. ammon. fort. Result, 0·552 per cent.

Exp. 12.—Moistened with ammonia solution, then percolated with ammoniated mixture of ether 4, chloroform 1. Result, 0·468 per cent.

Exp. 13.—Moistened with ammonia solution and percolated with ammoniated mixture of ether 4, acetic ether 1. Result, 0·484 per cent.

Exp. 14.—Percolated with water containing 2 per cent. hydrochloric acid. Result, 0·368 per cent.

Exp. 15.—Damped and percolated with a 2 per cent. solution of sodium salicylate in water.

This experiment was suggested on reading a note recently pub-

* Marck, "Assay of Coca Leaves," *Analyst*, June, 1889; 'Year-Book Pharm.,' 1889.

† Paul, "Cocaine and Its Salts," *Pharm. Journ.* [3], xviii., 781-783.

l shed on the use of this salt for extracting caffeine from tea. Result, 0 376 per cent.

Exp. 16.—Mixed with slaked lime and damped with water. Percolated with ether. Result, 0·436 per cent.

Exp. 17.—Van der Marck's process. Result, 0·200 per cent.

The following experiments with alcohol are introduced to show the extent of the decomposition noticed by Dr. Paul.

Exp. 18.—Percolated with 69 overproof spirit, evaporated to an extract, and taken up with warm acidulated (HCl) water to original volume. Result, 0·100 per cent.

Exp. 19.—Percolated with absolute alcohol, evaporated on water bath, and water added to keep up volume. No acid added. Result 0·080 per cent.

Exp. 20.—Percolated with proof spirit; spirit driven off after acidifying with dil. hydrochloric acid. Result, 0·404 per cent.

The next experiment will show that proof spirit takes up practically the whole of the alkaloid, and that there is no need to get rid of the spirit.

Exp. 21.—Damped and percolated with proof spirit. Spirit not driven off. Result, 0·548 per cent.

The method of working this experiment will be described later on. Many actual determinations of spirituous preparations of coca have been done by this process with satisfactory results.

These results show clearly that ammoniated ether is the best solvent for the extraction of alkaloids from coca, and the following process, which takes only about two hours, has been finally adopted.

Process.—Five grammes of the powdered leaves are damped with a weak solution of ammonia (about 2 per cent.) and allowed to stand for half-an-hour. Then placed in a narrow tubular percolator (10 inches long and of ½-inch bore) and percolated with ammoniated ether until 100 C.c. have collected. This is shaken out with three washings of a 2 per cent. solution of hydrochloric acid, collecting about 50 C.c. of the washings. This acid solution is now washed once with ether, then made alkaline with ammonia, and the alkaloid shaken out with three washings of ether. The collected portions of ether are transferred to a weighed porcelain dish, the ether blown off, and the residue dried at 75° C.

Average result by this method, 0 572 per cent.

Average result by Lyon's method, 0 574 per cent.

Table of Results.

Expt.	Outline of Treatment.	Alkaloid Obtained.
1	Acetic ether	·420 per cent.
2	Magnesia, damped, acetic ether	·512 ,,
3	Ether	·176 ,,
4	Magnesia, damped, ether	·508 ,,
5	Magnesia, damped, then dried, ether	·236 ,,
6	As exp. 2, but dried	·292 ,,
7	Damped with 2 per cent. sol. ammon., ether	·504 ,,
8	Damped with 2 per cent. ammon., dried, then moistened again, ether	·460 ,,
9	Damped with AmHO sol., ether-chloroform	·540 ,,
10	,, ,, ,, ,, chloroform	·408 ,,
11	Ammoniated ether.	·552 ,,
12	Damp with AmHO sol. ammoniated ether chlorof.	·468 ,,
13	,, ,, ,, ,, ,, ether-acetic ether.	·484 ,,
14	Water with 2 per cent. HCl.	·368 ,,
15	2 per cent. solution sod. salicyl. in water.	·376 ,,
16	Ca2HO, damped, ether.	·436 ,,
17	V. d. Marck's process.	·200 ,,
18	69 O. P. spirit, evaporated.	·100 ,,
19	Absolute alcohol, evaporated.	·080 ,,
20	Proof spirit, acidulated, evaporated.	·404 ,,
21	,, ,, not driven off.	·548 ,,
	Average result by new method.	572 ,,
	,, ,, ,, Lyon's method.	·574 ,,

The method of estimating spirituous preparations of coca will depend a good deal upon the strength of spirit. If the preparation is a 1 in 10 tincture of proof strength, 50 C.c. are slightly acidified with dilute hydrochloric acid, and shaken up with ether, which will of course dissolve in the spirit. Water, *q.s.*, must then be added until the ether separates. The ether is drawn off, and the acid liquid again shaken with ether, and this is repeated until no more colouring matter is taken up. Then make alkaline with ammonia, and shake out the alkaloid with three washings of ether.

If the preparation of coca is much weaker in spirit than proof strength, then it may be acidified and shaken with ether without adding water. I would recommend using a quantity of the preparation equivalent to 5 grammes of the leaf.

With reference to the different results obtained by different workers, I have been much impressed by the following passage in a letter to the *Chemical News* some time ago:—"Apropos of the great discrepancies in results obtained by different, more especially metallurgical chemists, a well-known ironmaster of the writer's acquaintance used to jocularly remark that 'chemistry was a glorious uncertainty.' And so it will remain until a uniform system is formulated for the conduct of methods of chemical analysis, whereby personal equation will be altogether eliminated or reduced to a minimum." It is quite true. Personal equation can only be eliminated when the conditions of working are fully stated. Yet there are many niceties in the mere matter of manipulation that cannot by any means be reduced to writing.

My sincerest thanks are due to Mr. F. W. Fletcher for suggesting many of the experiments recorded in this paper, and also for the facilities afforded me of conducting the investigation in his firm's laboratories.

OUR EXAMINATIONS.—A CRITICISM.

BY F. PILKINGTON SARGEANT.

The subject of pharmaceutical education has during the last few years received such a large amount of attention from pharmacists themselves that it would be difficult to approach the subject with any idea of suggesting originality. It has been discussed from the standpoint of the professor, the practical pharmacist, and the apprentice. Its moral effects, its elevating tendencies; in fact, its absolute necessity demands very serious attention. There is no doubt but that the chemist, together with his co-worker the physician, should not only possess an active intelligence, but that intelligence ought, for the benefit and safety of the public generally, to be trained to its highest pitch, for there is no profession or trade in which the intellect is more drawn upon, or in which the powers of deduction, observation, and discretion are more needed than in those callings which deal with the health, and often the life itself, of our fellow creatures. This being the case, it is apparent that no stone should be left unturned in the attempt to provide suitable men for the profession of pharmacy, and also to provide for the exclusion of those who, either by misfortune or negligence, are incompetent. All opportunities then for the discussion of this most important subject of education, and the modes employed for testing it, should be grasped by pharmacists in order that the next generation of chemists shall possess a thoroughly practical, as well as theoretical, qualification to perform those responsible functions which shall fall to their lot. It must be borne in mind also that, as new remedies are introduced new processes discovered, and new theories promulgated, the education of the chemist must continually be getting more complicated, and the object of those who have the welfare of pharmacy at heart must be to have effective knowledge, without superfluity, imparted to those juniors with whom they come in contact. It will certainly be one of the greatest problems with which the Pharmaceutical Council of the future will have to deal, in revising the syllabus of the two qualifying examinations, to separate that which will be useful from the vast amount of

rubbish with which it is surrounded. And now, with respect to existing arrangements for the promotion of pharmaceutical education, but more particularly the tests employed for the examination of pharmaceutical candidates.

When a child of moderate intelligence reaches, say the age of thirteen, he (or she) has generally formed a good idea of his own inclinations, and if he thinks he would like to be a chemist, he is generally set to study for the Preliminary, and as that examination can be passed before the child is fourteen, he becomes at fourteen a student of the Pharmaceutical Society; he has seven years to wait before he can sit for the Minor, an examination which he can prepare for in three or at the most six months, that means, that if a boy gets through his Preliminary at fourteen, he may practically waste what spare time he has for six years, and then pass his Minor. This is a state of affairs which should certainly not exist, and there is only one remedy, and that is the elevation of the standard of the first examination. It ought to be so arranged that one continuous course of study could serve for all the three examinations, and it would not be difficult to bring about.

Why are mathematics excluded from the syllabus? This most important subject would be most useful to the young chemist, but a far more flagrant omission is that of elementary chemistry, which with elementary botany would render the examination far more effective than at present. Not only that, but it would create in the young mind an interest in these sciences, which would grow and tend to the development of a solid foundation which would be of great benefit, not only in simplifying future study, but in after life. At present it is a matter of everyday occurrence for a student to begin the study of chemistry and botany about six months previous to his Minor examination, the knowledge thus obtained is, in fact must be, transient. Again, as the Preliminary now stands, it does not carry out the purposes for which it is intended; it has rather the opposite effect, for its very simplicity induces lazy and incompetent candidates to sit, and this tends very largely to augment the failures at the Minor. This examination, then, calls for immediate attention, since it is the first test applied to the young aspirant to pharmacy, by which he is supposed to be able to judge of his own fitness to proceed further.

Next comes the Minor, which, of course, is the most important examination of the three. First, then with respect to the course of study adopted. The scientific education of the majority of candidates for this examination is generally obtained during a six months' sojourn at the "Square" or some provincial school of pharmacy, and though this may be sufficient to get through the Minor, it is not up to that standard to which the chemist as a scientific man ought to aspire. Of course, whether the knowledge possessed by a candidate is real or superficial is dependent wholly on himself, but it is certainly to his benefit, both socially and commercially, to be possessed of an education founded on a sound scientific basis. As a means to that end it would be far better if more candidates would make use of the facilities offered by the Science and Art Department than at present, the advanced stages of both chemistry and botany cover all the ground required for the Minor, and by beginning at the elementary stage and working up, these two sciences can be made both pleasant and interesting. With respect to botany, it would be found far more interesting if candidates would pay more attention to the practical portion than the majority appear to do. Dispensing, which is one of the principal subjects in this examination, is an essential point of pharmaceutical education; it is more an art than a science, and as such requires practice and care. No amount of reading will make a good dispenser, though the study of theoretical dispensing, *i.e.*, the actions of incompatibles, etc. must not be entirely abandoned. Materia medica is also a subject in which "practice makes perfect," the eye requires training in this science much as it does in practical chemistry to detect characteristics, which to a casual observer would pass unnoticed. Why the "geographical source" of a drug is required to be known, whilst such an important item as the therapeutics is ignored, is somewhat incomprehensible, in fact, it appears to be the general opinion that a slight knowledge of the action of drugs on the human system could be advantageously placed in the requirements of this science. Latin, the bugbear of many candidates, is frequently "crammed," this could be avoided somewhat by altering the Preliminary as suggested above, for then the Preliminary and Minor would be closer together, and the Latin would glide from the one to the other.

Here, however, as in other subjects, it all depends on the man himself; if he wisely keeps up his Latin grammar, he is more or less prepared for the Minor in this subject. The ordinary experience in even a first-class dispensing house is not sufficient practice to enable one to come up to the standard required in the grammar, though practice alone is necessary for the translation or reading of some of the papers of hieroglyphics dignified by the name of prescriptions. Pharmacy and pharmacy law are obviously essential, the former subject necessitates a large amount of study, which cannot be avoided, but to a well-trained apprentice there is very little difficulty. As to the conduction of the examination it is certainly all that can be desired, the examiners are firm but courteous, candidates are made to feel as much at home as possible and though at times a poor man gets through and a good man gets thrown, when consideration is taken of the number and variety of students which the examiners have to deal with one cannot help concluding that the Minor is a good and in every way a fair examination.

The Major examination is one which every chemist should endeavour to pass, not only on account of the benefit which he himself would derive from it, but also as making one step towards that higher pharmaceutical education which is so desirable in all. This examination is not by any means to be considered final, only as a foundation for the pleasurable pursuit of science which marks the intellectual man. When a man becomes absorbed in business, he requires an antidote to the cares and worries which beset him, and scientific recreation is the antidote which the chemist ought to seek, and as the object of education is primarily to create an interest in, and then to impart a knowledge of, the various arts and sciences with which we are acquainted, it behoves every member of the pharmaceutical craft, whether in the Society or not, to do his utmost to educate himself and those under his influence to their utmost capacity, for his and their good, and to raise and maintain the dignity of the profession.

Detection of Eucaine Hydrochloride in Cocaine.—The ready solubility of cocaine hydrochloride distinguishes it at once from the eucaine salt, which requires 9 parts of water to dissolve it. A fraudulent mixture of eucaine with cocaine hydrochloride may be readily detected, according to Vulpius, by dissolving 10 centigrammes of the salt in 50 C.c. of water, and adding 2 drops of ammonia. If the salt of cocaine is pure the solution remains bright, even if it throws down crystals, whereas in the presence of eucaine a milky turbidity results. (This is similar to Maclagan's well-known test for amorphous alkaloids in cocaine hydrochlorate.)—*Répert.* [3], vii, 311, after *Pharm. Centr.*

NOTES ON THE USES OF DRUGS.*

DRUGS ACTING ON THE ALIMENTARY CANAL.

Sialogogues.—Food consists of starches, proteids, or albuminous matters and fat. When food is taken it is first divided into small pieces by the teeth and mixed with saliva in the mouth. Saliva is an alkaline fluid; it contains a ferment which converts starch, a body insoluble in water, into soluble sugar. Sialogogues are drugs that increase the amount of saliva secreted. All the dilute acids, such as hydrochloric or phosphoric acids; all pungent substances, such as mustard, horse-radish, as in spiritus armoraciæ co.; all bitters, such as gentian and quinine; and, lastly, aromatic and ethereal bodies, like peppermint, chloroform, and ether, are sialogogues.

There is a well-known expression that a pleasant thing makes the mouth water. This expresses in a popular way the physiological fact that the secretory nerves of the salivary glands can be excited through impressions received by sensory nerves. The sialogogues just mentioned act in this way; they stimulate the nerves of sensation where they end in the skin on the inside of the mouth—mucous membrane, as it is called. The stimulus is carried to the salivary glands, and these respond by increasing their secretion.

Other sialogogues act differently; they pass into the blood and influence the salivary glands in their passage through them. Such are mercury, iodide of potassium, nicotine, pilocarpine, and physostigmine.

Uses of Sialogogues.—Saliva keeps the mouth moist; when the mouth becomes dry we suffer from thirst. Saliva also moistens and partly digests food and prepares it for the stomach. In fever when the mouth is parched and dry, dilute acids, such as citric acid or lemon juice, are taken to relieve thirst.

Sialogogues are not often prescribed for indigestion, because the stay of the food in the mouth is so short that the digestive action of saliva is not important; however, it is not at all a bad thing to chew a little ginger just before meals.

Antisialics.—Under certain circumstances the secretion of saliva is excessive; this occurs when the mouth is ulcerated or unhealthy, or when there is paralysis of the muscles used during swallowing. Iodide of potassium or mercury taken in excess will produce a large flow of saliva. Drugs that diminish the amount of saliva are known as antisialics. The first group of antisialics cleanse the mouth and are therefore only useful when the mouth is sore or unhealthy; it includes tincture of myrrh, borax, chlorate of potash and astringents, such as alum and nitrate of silver. The second group of antisialics act directly on the nerves of the salivary glands, and stop secretion. Belladonna is the most important member of this group. In whatever way belladonna is administered, either swallowed as tincture, or applied as ointment to the skin, or injected subcutaneously in the form of atropine sulphate, it lessens secretion.

Opium is also a powerful antisialic, it acts by reducing the irritability of the mucous membrane. Excessive secretion of saliva is often treated by the internal administration of belladonna, and the application of a mouth wash containing alum or chlorate of potash.

Mouth washes are used to cleanse the mouth. They may be either concentrated and applied with a brush, or diluted, and the mouth rinsed out with them; they should be antiseptic, free from unpleasant smell, and if possible of pleasant taste. A solution of silver nitrate of the strength of ten grains to the ounce is a powerful astringent, as also are the glycerins of tannic and boracic acid. Tincture of myrrh is both astringent and pleasant. A very simple mouth wash used for rinsing out the mouth consists of a teaspoonful of boracic acid or alum dissolved in half a pint of water. A solution of permanganate of potash diluted so as not to be much darker in colour than dark sherry is also good. Mouth washes are made more pleasant by the addition of spirits, such as eau de Cologne or the pharmacopœial spirits of peppermint and lavender.

Gargarismata or gargles are prepared on the same principles as mouth washes, but greater care must be taken that none of the ingredients are poisonous, as there is always some chance of accidental swallowing of the fluid. A very useful gargle is one containing nascent chlorine; it is made by adding ten drops of strong sulphuric acid to five grains of chlorate of potash; it is then mixed with one ounce of simple syrup, which being viscid retains the liberated chlorine gas. After standing half an hour, sixteen ounces of water are added, and the whole is ready for use.

Children are unable to gargle properly, so that in their case all applications to the pharynx, as the back part of the throat is called, are made with a camel's hair brush. The tincture of perchloride of iron is a very good application.

Drugs which influence the stomach consist of gastric sedatives, these reduce pain and prevent excessive movements; gastric tonics, these increase the secretion of gastric juice, or otherwise help to digest food; and carminatives, or drugs which help to expel gas from the stomach and intestines.

Physiology teaches the principles of digestion in the healthy stomach; it shows how disease causes a departure from the normal. It is possible to-day to find out the actual condition of the stomach contents in health and disease, and to apply the right remedy. The stomach receives the food which has left the mouth, masticated, softened, and mixed with alkaline saliva; the food as it is received consists of starches only very partially converted into sugar; the proteids and fats are unchanged.

The function of the stomach is to change starch into sugar, to act on the proteids, and make them soluble in water by converting them into peptones, and finally to absorb them into the blood.

The stomach is a hollow bag with muscular walls, its inside lining is known as mucous membrane. In the mucous membrane are glands which secrete the gastric juice. One end of the stomach receives the œsophagus or gullet, the other end opens into the gut. This opening is known as the pylorus, and it is surrounded by muscles which control it. The movements of the stomach are so arranged that when food enters the organ it is forced to pass round and round along the walls of the stomach, and only the finely divided and digested part can get into the central stream and out through the pylorus.

The gastric juice is an acid fluid containing ferments which convert proteids into peptones, starches into sugar, and coagulate milk.

Drugs improve digestion by increasing the secretion of the gastric juice, by supplying artificial ferments, and by stimulating the muscles of the stomach walls.

Dilute alkalies taken before meals act very well by stimulating the secretion of gastric juice. Ten drops of diluted caustic potash solution or 20 grains of bicarbonate of soda or potash are often ordered.

Bitters also stimulate gastric secretion, and the infusion or tincture of gentian or cascarilla are frequently given in addition to alkalies.

Alcohol in small amounts is good, and the popular mixture of sherry bitters as a pick-me-up before meals is scientifically right.

Bitter beer taken moderately is good, as it is somewhat aromatic, stimulating, and bitter; large quantities are of course injurious.

Gastric juice may be deficient in the ferment pepsin. This want is supplied by taking the ordinary "pepsina" of the British Pharmacopœia, prepared from the stomach of pig, sheep, or calf in doses

* The introductory paper in this series appeared on page 139.

of two to four grains immediately after meals. Papain, the ferment prepared from the juice of the trunk and fruit of *Carica papaya*, the South American melon tree, is sometimes even more valuable and efficacious than pepsin.

Papain acts equally well in an acid or an alkaline medium, while pepsin can only digest in an acid medium; the former, too, will digest from one thousand to two thousand times its own weight of albumin, and is therefore more powerful than the latter.

In indigestion the stomach contents may be either acid or alkaline; a ferment which is capable of acting in either condition is therefore useful. The dose of papain is one to four grains, taken after meals.

Ingluvin is the ferment extracted from the stomach of the fowl, and is considered by some to be powerful; it is rarely used.

Though certain other animals have wonderful powers of digestion —as witness the hippopotamus and the ostrich—the ferments from their stomachs have not as yet been introduced into medicine.

The movements of the stomach are stimulated best by nux vomica, of which ten drops of the tincture added to an alkali can be taken before meals. What is the condition of the stomach in an attack of indigestion? A man named Alexis St. Martin had a gastric fistula, that is to say, an open passage leading from the stomach to the skin.

The condition of his inside was observed by Dr. Beaumont; he found during an attack of indigestion that the internal coating of the man's stomach became red and inflamed, the gastric juice was no longer poured out, large bubbles of gas were formed inside the stomach, which became distended and ceased to move properly, while the contents of the stomach became very acid and foul.

An attack of indigestion may be cut short by inducing vomiting. Emetics are drugs which cause vomiting, and will be dealt with later. Milder measures would be to stimulate the stomach to expel the gases; this is done by using carminatives; or the acid fluid may be neutralised by alkalies, the gases may be absorbed by charcoal. When the acute attack has subsided, gastric sedatives may be used to restore the stomach to its normal condition, and gastric tonics may be necessary later.

The *antacids* that are most frequently used are bicarbonate of potash or soda in doses of twenty grains. Magnesium carbonate taken in lozenges is a useful antacid, and is in addition a mild purgative.

The officinal aromatic spirits of ammonia combines pleasantly an alkali with a carminative; lithia water and the liquor magnesii citratis are other useful alkalies. Vichy water is also good, and can be mixed with claret.

Lime water and the saccharated solution of lime are used to prevent and neutralise the excessive acidity produced by fermentation of sugar in the stomachs of babies.

Gastric sedatives are drugs that diminish the irritability of the mucous membrane of the stomach, and thus relieve pain and vomiting. The salts of bismuth are the best gastric sedatives.

Bismuth subnitrate and bismuth carbonate are both insoluble in water, and consequently their action is partly a mechanical one.

Of the soluble salts of bismuth, the most frequently used are the citrate and the ammonio citrate. Large quantities of the soluble salts are poisonous, producing inflammation of the stomach and bowels, and fatty degeneration of the liver, acting in a manner similar to arsenic.

Bismuth salts are excreted in the form of black sulphide, and they therefore make the fæces dark coloured. An impurity in bismuth salts also makes the breath foul.

Salicylate of bismuth is not official, this salt combines the sedative action of bismuth with the antiseptic action of salicylic acid, it is used in inflammation of the stomach or bowels, especially when caused by decomposition of food and the presence of bacteria.

Oxalate of cerium acts in almost the same way as nitrate of bismuth, but it is especially useful in controlling the vomiting of pregnancy. The dose is small and should not exceed five grains.

Pain in the stomach is called gastrodynia, and is relieved by sedatives, which act on the nervous system. They include belladonna, opium or morphine, cocaine, and nux vomica.

Prussic acid acts as a gastric sedative in doses of three to five minims of the official diluted acid. It is a poisonous drug and should only be used with great caution; one drop of the acid applied to the skin is absorbed and makes the part insensitive by paralysing the nerves that conduct pain sensations. It is in this way that it acts on the stomach. Prussic acid kills man by causing asphyxia and paralysis, one drop injected into the eye of a cat will make it drop down dead as if shot.

Carbonic acid gas in the form of soda water is a useful sedative, excess of it causes distension. It is not unusual in treating cases of long-standing indigestion, especially when he stomach has become distended or dilated from accumulation of gases and feebleness of its muscular walls, to use gastric disinfectants.

Carbolic acid may be taken in doses of 1 or 2 minims well diluted, the sulpho-carbolates of zinc and soda are efficacious and more convenient to take.

Salol, resorcin, and β-naphthol are not official, but are ofte ordered.

Gastric tonics are drugs that increase the secretion of gastric juice or stimulate the muscles of the stomach to break up the food and generally help digestion. Bitters are gastric tonics. It is not an uncommon practice to take a bitter before a heavy meal, the habit is based on good scientific grounds. It is right to take soup and sherry at the beginning of a dinner, and sherry and bitters are good to increase the appetite; but constant indulgence in the habit is not advisable.

Bitters increase the appetite, stimulate a flow of gastric juice, and also prevent decomposition; the British Pharmacopœia contains several, of which gentian, quassia, calumba, cascarilla, and chiretta are the best known.

Tannic acid occurs in all the vegetable bitters except calumba and cascarilla, and consequently their infusions turn black when mixed with salts of iron.

Alkalies taken in small quantities before meals are gastric tonics, because they stimulate the stomach to pour out its juice, according to the well-known rule that alkalies increase the flow of acid secretions, and *vice versâ*.

In some disorders of the stomach the gastric juice is deficient in acids, and then small doses of dilute hydrochloric, lactic or phosphoric acids in the order named are valuable.

Pepsin is the ferment present in gastric juice which makes proteids such as meat and white of egg into peptones. Peptones are soluble in water, and can be absorbed by the stomach.

When the gastric juice, as frequently occurs, is deficient in natural pepsin, artificial pepsin is a valuable gastric tonic. The muscular movements of the stomach are best stimulated by nux vomica or its alkaloid strychnine. Both nux vomica and strychnine are intensely bitter, and so stimulate the appetite, they increase the flow of saliva and stimulate the muscular movements of the whole alimentary tract; in addition, they have a special action on the nervous system, similar to antipyrine, by which they relieve the headache, flatulence, furred tongue, and general depression, symptoms of a bilious attack. Pain in the stomach is also relieved by nux vomica.

Carminatives are employed to relieve pain in the stomach, and to remove distension of the stomach caused by flatulence, by regulat-

ing muscular action. The Pharmacopœia is rich in carminatives. The vegetable kingdom supplies us with a large number of official aromatic oils, such as the oils of cinnamon, nutmeg, caraway; all these are carminative. The chemical laboratory gives us alcohol, ether, and chloroform. Charcoal is also a carminative drug, and acts probably by absorbing gases. It was at one time a popular remedy, and charcoal biscuits and lozenges were on everybody's tongue, and in everyone's mouth. Charcoal absorbs gases very readily in the laboratory, and it was assumed that it would do the same in the stomach. But absorption of gases is a property of dry charcoal only, when it is wet the action is much less. Notwithstanding this, charcoal in doses of five to ten grains is a useful remedy for those who suffer from eructation of gas occurring a few minutes after taking food.

WEIGHTS AND MEASURES.

(*Continued from page* 199.)

An attempt has been made recently, in a correspondence which appeared in the *Times*, to show that the proper remedy would be to adopt a duodecimal system of weights, measures, coinage, and apparently of arithmetic. The chief argument used for this is that 12 is made up of the factors 2, 2, and 3, or 4 and 3, which are more convenient than 2 and 5, of which 10 is composed. It is quite true that sub-division into two parts repeated more or less frequently is often necessary, and that in a considerable proportion of cases more figures would be required to express this in a decimal system of weights or measures, as in a decimal system of arithmetic, than in a duodecimal system, but it can nevertheless in all cases be accurately expressed. It is also true that sub-division into three equal parts is to a certain, although much less, extent necessary, and that this cannot be expressed exactly in a decimal system, unless the number taken happens already to contain 3 as a factor. But with little trouble an approximation can be obtained, and that as near as may be desired, whether in weights, measures, or arithmetic. It is but fair to point out that precisely similar difficulties would arise in a duodecimal system if it were required to divide by five; no exact expression, weight, or measure could be obtained, but only a more or less close approximation, so that the advantage of a duodecimal system over a decimal as regards the factor 3 must be reduced by corresponding, although perhaps somewhat smaller, disadvantages as regards the factor 5. But is such a change within the range of practical politics? It is clear that very small advantage would be gained unless the radix of the denominations of weights and measures was the same as that of our arithmetic, so that having a duodecimal system of weights and measures, we must have a duodecimal arithmetic. If we were now devising an arithmetic for the first time, something doubtless might be said for this proposal; besides the before-named advantage of having 3 as a factor instead of 5, we should require fewer figures in use. We should, it is true, have to invent new characters for 10 and 11, each of which must, to avoid confusion, be represented by a single sign, but any number from 1 to 143 could be indicated by two figures, instead of as in our decimal system only numbers from 1 to 99, three figures would carry us on to 1727, and four to 20,735, and so on. A still greater advantage in this direction would be obtained if we followed the ancient plan of using the letters of the alphabet to indicate numbers, but to a greater extent, using the whole of the twenty-six signs of our alphabet as numerals, and making the common radix of our weights, coins, and arithmetic 26! Then we could represent any number up to 675 by two figures, and up to 17,575 by three. But the multiplication table would contain 676 numbers instead of 100, and all the operations of arithmetic would involve a greater mental strain. Even the duodecimal arithmetic would, with its 144 figures in the multiplication table, make a very appreciable increase to this form of labour, going far to neutralise the advantages of the factor 3. But could such a change in our arithmetic be seriously contemplated? The confusion would be enormous. We should need some clear mode of indicating which was intended or signified by any given figures. Unless a number happened to contain one of the two new signs for 10 and 11 there would be no internal evidence. In printing, a distinct type might be used, but in writing this would not serve, for there are only too many writers whose figures are even now sadly indistinct, and if we had to trust to such agreed differences to make it clear whether for example, by the figures 97 was meant ninety-seven or one hundred and fifteen, our mistakes would be endless, and it would affect not only this country but the whole world, for there is no other than decimal arithmetic in use. Nor, even if accomplished, would the introduction of duodecimal arithmetic serve our purpose, for, as we have seen, none of our systems of weights or measures has a uniform duodecimal radix, and to get this advantage nearly all denominations would need to be changed. To take an instance in money. It is true that shillings, pence, and farthings would be readily expressed in a single simple number, as, for example 14*s.* 8¾*d.* would be represented accurately by the duodecimal number 12·89 shillings, the transition between shillings and pence being indicated by the "duodecimal point," and the ¾*d.* by 9 in the second place after that point, being equal to nine-twelfths of a penny. But the transition between shillings and pounds could not be so indicated, as the radix 20 would be duodecimally written 18, a less convenient factor to apply than 20 in decimal arithmetic. Similar considerations apply in respect of weights and measures where the radices between denominations are nearly all different.

It is a common practice with those who make mercantile or manufacturing calculations to reduce "mixed" expressions to some one denomination, expressing all the lower denominations, if any, decimally, whether this be pounds or shillings, tons or pounds, miles or inches, and having thus got rid of the nuisance of the radix, make the calculation required, and finally reduce the result again for general or public use to a mixed expression with all the proper denominations. This naturally requires a large number of figures and involves much labour, both "reductions" being quite needless in the decimal system. It is, on the other hand, less fatiguing and less liable to error than if the diverse denominations were retained, and especially if not one but several multiplications or divisions have to be made in the course of the calculation. It is true that Sir Frederick Bramwell, in the course of a letter to the *Times* (April 17, 1896), which, being by him, we need not say is interesting and humorous, combats this, and instances a specimen calculation given by Mr. Dowson in evidence before the late Parliamentary Committee. The problem was to multiply 16 tons 18 cwt. 3 qr. 21 lb. by 78, which, according to Mr. Dowson, by one method required the use of 124 figures, and by a shorter 40 figures. Sir Frederick then says, "I gave evidence before that same Committee, and handed in a paper containing a proper mode of dealing with 78 times the 16 tons 18 cwt. 3 qr. 21 lb., involving less that 40 figures. I expected that the Committee would publish this as an appendix, but they have failed to do so." He then gives his method as follows:—

"I should, to begin with, call this 17 tons and should multiply—

78
17
—
1326

"But 17 tons is 1 cwt. and 7 lb. in excess of the weight given. We have, therefore, to deduct 78 cwt. and 78 sixteenths of a hundredweight (7 lb.), equal to 82 cwt. and seven-eighths—

4 2 cwt. 3 qr. 14 lb.
1321 17 cwt. 0 qr. 14 lb

"This the correct answer is arrived at by the use of 21 figures, . . . actually five figures less than Mr. Dowson had used for his kilogramme multiplication" of the equivalent weight. As might be expected from Sir Frederick, this is a highly ingenious and interesting method of dealing with an apparently formidable mixed expression. But in the first place we count 22 figures in the calculation without taking into account those in the explanatory paragraph, which also indicate some mental arithmetic, which to many would be impossible and to most formidable in its nature. Moreover, the 22 figures do not include those expressing the original weight to be dealt with, although they do those expressing the result. Another method might be adopted scarcely less complex, viz, to multiply by 80 and deduct from this result twice the original weight, which happens to require also just 22 figures. But is it not fair to say that not one in a thousand of ordinary mercantile men, perhaps not one in a hundred of engineers, would in practice see such a short cut as this? It would be a very dangerous step to challenge Sir Frederick Bramwell's skill in any such matter, but is not this short cut itself possible only because the expression, although outwardly complex, is really much less so than it appears? It happens to be just 1 cwt. 7 lb. less than 17 tons. But suppose it were 16 tons 13 cwt. 3 qr. 17 lb. instead? To the writer it appears that Sir Frederick's method would be less direct and need more figures, although the other—the multiplication by 80 and deducting twice—would be applicable, and appears to be somewhat more general.

But apart from such special performances in arithmetical gymnastics, which are rather curious than useful, it is a fact that "mixed" expressions, viz., those expressed in more than one denomination, present difficulties in calculation which are entirely absent when there is but one denomination, or, which is the same thing, when the denominations have a common radix which is the same as that of the arithmetic employed.

A very important question in regard to weights and measures is the relation between one system and another, as, for example, the relation between weight and volume, or length and area, etc. A frequent and exact use of such relationships is absolutely necessary, for it is constantly requisite, having ascertained the dimensions of an object, to calculate its weight, etc. With our own "systems," of course, these ratios are exactly known, but they are not very simple. An imperial gallon, it is true, is the volume of 10 lb. of distilled water at 60°, but if our measurement is in feet and inches we have to say that a cubic foot of water weighs 62·321 lb., that a gallon is 277¼ cubic inches, that a cubic yard of water weighs 1682·667 lb., or 15·024 cwt., or a little more than ¾ of a ton. While this last would for many purposes be quite sufficient, yet the "little more" is 0·16 per cent., or about 1 in 600. An acre is 4840 square yards, or 1 square mile contains 640 acres. If we compare these with the metric system, we shall notice that the relations are much simpler. A gramme, the standard of weight, is 1 cubic centimetre of water, a litre is 1 cubic decimetre or 1000 cubic centimetres, which volume of water weighs 1 kilogramme. A cubic metre contains 1000 litres, and this volume of water weighs 1000 "kilos." So for area of land the *are* is a square, each side of which is 10 metres, and therefore contains 100 square metres; the hectare is a square, each side of which is 100 metres, and so counts as 10,000 square metres, being equal to about 2½ acres. A kilometre is a length of 1000 metres, and a square kilometre contains 100 hectares. It is easy to pass from the linear measurement of a body to its weight, for its rectangular dimensions in decimetres give at once its volume in cubic decimetres or litres, and this number also expresses the weight of an equal volume of water in kilogrammes, and by multiplying this by the constant for specific gravity, we have at once the weight of the body in kilogrammes. But this facility is due to the various denominations for length, area, volume, and weight having the same basis or a direct and simple relation, and that the radices of all denominations are the same as that of the arithmetic in use. This does not imply any special advantage in the common standard—the metre—itself. If our own yard had in a like fashion been made the base of a similar system, it would have offered precisely similar advantages, and might possibly have been in some respects slightly more, and in others slightly less, convenient than the metre.

TUNG OIL (CHINESE WOOD OIL).

BY W. H. DEERING, F.I.C.

The following are the results of an examination of a sample of tung oil, sent by Sir Frederick Abel, with the view of obtaining some preliminary information as to how it would compare with linseed oil, and if it seemed likely to be suitable for the manufacture of linoleum.

The oil had the following characteristics:—*Colour*—Golden-yellow, clear and viscous; *odour*, that of a seed oil; *specific gravity* at 60° F., 0·9405 (water at 60° F. 1).

It is a glyceride oil, giving on saponification 96½ per cent. of fatty acids, which, at ordinary room temperature, are hard and very crystalline. It required 1·18 per cent. of potassium hydrate for neutralisation of its free acid, and 19·12 per cent. for total saponification. Raw linseed oil usually contains only about one-fifth that amount of free acid (a point of no importance as regards any practical application); the total potash required for saponification of raw linseed oil averages from about 18·8 per cent. to 19·1 per cent. of potassium hydrate, being practically the same number as with the tung oil.

The bromine absorption is 98 per cent. bromine (dry bisulphide of carbon being the diluent); this is greater than with raw linseed oil, for which 94 per cent. bromine is a high number.

Exposed to air in a thin film, the tung oil dries to a white, opaque solid film in twenty hours; raw linseed oil under similar conditions usually requiring about sixty hours.

Ten grammes of the tung oil, to which were added ½ per cent. of litharge and ½ per cent. of red lead, were heated to 500° F. (no frothing or darkening of the oil occurred); and a rapid current of air was blown through the oil (kept at 500° F.). In fifteen minutes the oil jellified. The product, when thoroughly cold, was a light brown semi-solid, elastic, and slightly sticky.

A corresponding quantity of the same sample, heated with the oxides of lead at 500° F., but not air-blown, jellified in ten minutes. The product was similar to the air-blown product.

Another corresponding quantity, heated at 500° F., without the oxides of lead and not air-blown, also jellified in ten minutes.

The product examined on the following day was found to be a yellow, elastic semi-solid, but stickier and rather less solid than the products of the two previous experiments.

Corresponding amounts of linseed oils, with the oxides of lead added, and air-blown at 500° F. for thirty minutes, yielded only thick liquids of dark-brown colour. The solidification of the tung oil, not air-blown, seems too rapid to be accounted for by oxidation only, but appears rather like a polymeric change.

The opacity of oxidised tung oil is against its employment in varnish-making, but the properties of the oil are such as seem likely to make it a valuable material in the manufacture of linoleum. —*Imperial Institute Journal.*

VICTORIAN ESSENTIAL OILS.*

BY JOHN C. UMNEY.

(*Concluded from page* 201.)

No. 13.—Otto of Rose.

The specimen of otto of rose was free from alcohol, had a specific gravity of ·8886 at 15° C., and did not solidify at 5° C., although it became slightly opaque at that temperature. The specific gravity of Turkish otto of rose (distilled in Kezanlik—district of the Balkans) is usually from ·865 to ·870 at 20° C., and its temperature of solidification varies, according to the percentage of stearoptene contained in the oil, from 17° to 20° C.

The effect of climate and soil is very marked in the case of this oil, the percentage of stearoptene varying from 6 to 7 per cent., in Turkish otto, to 60 per cent. or more in English-distilled otto. It is possible that in the case of this sample the stearoptene has been partially removed in the condensation of the oil.

The specific gravity of the oil approximated very closely to that of its liquid constituent, geraniol, which ranges from ·882 to ·883 at 15° C. More than 75 per cent. of the oil distils between 215° and 235° C., and the proportion of alcohols (geraniol) indicated by the acetylation process is 57·8 per cent.

The odour of the oil is good, and compares favourably with Turkish otto, and it would be interesting to distil a normal sample of the oil, containing stearoptene, in order to ascertain how it is affected by Australian climate and soil.

The present value of Turkish otto of rose of the purest kinds obtainable is 32*s.* per English ounce (avoirdupois).

No. 14.—Oil of Peppermint.

The specimen possessed a pale, greenish-yellow colour, and contained a considerable quantity of added alcohol. The specific gravity, after removal of the alcohol, was found to be ·912 at 15° C., which is above that usually found in black and white English and Saxon peppermint oils.

The optical rotation was −27 at 15° C. By fractionation the following percentages were obtained :—

From 200–210° C.	36 per cent.
,, 210–220° C.	53 ,,
,, Residue	11 ,,

The amount of menthol present in the free form, and of esters, was determined by the acetylation process, and found to be 53·9 per cent., of which 8·3 per cent. was in the form of esters. This proportion of esters is somewhat higher than usually found in black English oil, and below that found in the white oil.

For the purposes of comparison, a table is appended showing the principal characters of this oil, and typical black and white English, Saxon, and American oils :—

Sample.	Specific Gravity at 15° C.	Optical Rotation in Tube of 100 M m.	Menthol in Form of Esters.	Free Menthol.	Total Menthol.
English (black).	·9072	−18·5	5·6 p.c.	57·5 p.c.	63·1 p.c.
,, (white)	·9058	−33	13·6 ,,	51·9 ,,	65·5 ,,
Dunolly	·912	−27	8·3 ,,	45·6 ,,	53·9 ,,
American	·9215	−29	8·4 ,,	38·0 ,,	46·4 ,,
Saxon	·9057	−26·25	6·1 ,,	55·3 ,,	61·4 ,,

From the above it will be seen that the oil compares fairly well with samples distilled from the same species in other countries.

* Samples of essential oils and essences having been received by the Scientific Department of the Imperial Institute from the Government Flower Farm at Dunolly, Victoria, they were submitted to Mr. J. C. Umney, of the firm of Messrs. Wright, Layman, and Umney, who has reported on their character and probable commercial value.—*Imperial Institute Journal.*

The value at the present time of the finest black Mitcham peppermint oil is 30*s.* per lb. Oil such as represented by the specimen examined would probably realise 9*s.* per lb.

No. 15.—Oil of Pennyroyal.

This oil possessed, to a marked extent, the odour of peppermint, in addition to that of pennyroyal, and a study of its chief chemical and physical characters confirms the presence of the two oils in the specimen.

Its specific gravity was ·918 at 15° C., and its optical rotation only +7 in a tube of 100 M.m. The specific gravity of normal oils of both *Mentha pulegium* and *Hedeoma pulegioides* is not below ·930, and the optical rotation is usually from +18 to +20. The specific gravity of the majority of peppermint oils rarely exceeds ·915 at 15° C., and they are usually lævo-rotatory to the extent of −20 to −30. A comparison of the fractionation of this oil with an oil distilled from American pennyroyal (*Hedeoma pulegioides*) and English pennyroyal (*Mentha pulegium*) indicates a considerable difference between them.

	Below 210°.	210°–220°.	220°–223°.	Above 223°.
Dunolly	43 per cent.	34 per cent.	13 per cent.	10 per cent.
American	4 ,,	79 ,,	12 ,,	5 ,,
English (old)	15 ,,	37 ,,	7 ,,	41 ,,

The percentage of alcohol, probably menthol, was determined and found to be: as ester, 8·7 per cent.; as free alcohol, 27·5 per cent., calculated as menthol and menthyl acetate, respectively. This is at least 10 to 15 per cent. more than is yielded by English and American pennyroyal oils.

It appears almost certain from these results that the oil is a mixture of pennyroyal and peppermint oils, probably due to the admixture of the herbs prior to distillation. Under those circumstances it is not possible to give any opinion on the value of the sample.

No. 16.—Oil of Rosemary.

This oil, to which no alcohol has been added, was of a pale greenish-yellow colour, and possessed the more pungent camphoraceous odour, characteristic of English oil, rather than the softer, more pleasant aroma of the best French rosemary oils. Its specific gravity was ·906, and its optical rotation +0·25 at about 15° C. in a tube of 100 M.m.

Fractionation of the oil gave the following results:—

Below 176° C.	13 per cent.
176-200° C.	64 ,,
Above 200° C.	23 ,,

The large proportion of product boiling above 200° C. pointed to high percentage of borneol, which was confirmed by direct determination by the acetylation process; 15·1 per cent. of borneol being found to be present.

The oil was readily soluble in twice its volume of alcohol of 90 per cent.

It may be interesting to compare the principal characters of this sample with oils of undoubted purity of English and French distillation, and for this purpose the following table is appended:—

Distilled in	Specific Gravity at 15° C.	Optical Rotation in a tube of 100 Mm.	Fractionation.			Borneol per-centage.
			Below 176°.	176°–200°.	Above 200°.	
Dunolly	·906	+0·25	13 p.c.	64 p.c.	23 p.c.	15·1
England (Lincs)	·9097	+7·5	14 ,,	73 ,,	13 ,,	13·26
France (Grasse)	·9079	+3·5	22 ,,	59 ,,	19 ,,	11·07

The above figures indicate that the oil is of exceptionally high borneol value, and compares with the finest English oil, the present

value of which is 50*s.* per lb. (chiefly because it is English oil). Practically, the whole of the finest rosemary oil employed commercially is of French distillation, and worth about 3*s.* per lb.

No. 17.—OIL OF SAGE.

The oil described as above possessed a strong thyme odour, quite different to that of oils usually met with in trade under this name, and which are distilled in the South of France from *Salvia officinalis*.

The specific gravity at 15° C., after removal of alcohol, was ·922, and the optical rotation +2·5 in a tube of 100 M.m. The strong thyme odour suggested the presence of one or both of the phenols present in thyme oil, and treatment with solution of caustic potash showed the presence of 17 per cent. of phenols. This portion was separated, decomposed, and found to distil at 232° to 233° C., the boiling point of Carvacrol.

Several samples of true oil of sage (*Salvia officinalis*), which were examined for comparison, differed from it in containing very small proportions of phenol (only from 2 to 3 per cent.), but contained 22 to 23 per cent. of alcohols, as determined by the acetylation process; practically none was present in the oil under notice.

These characters point to the oil having been distilled from *Satureja hortensis* (summer savory), and not from *Salvia officinalis*, the garden sage. The oil is not employed in any quantity in this country, and possesses very small commercial value at the present time.

No. 18.—OIL OF TANSY.

This sample contained a considerable proportion of alcohol. It possessed a greenish-yellow colour and the characteristic odour of the plant. Its specific gravity at 15° C., after removal of alcohol, was ·922, and its optical rotation +37.

Careful comparison of this oil has been made, in regard to the above points, with samples of American oil, and no practical difference has been detected; but an oil of English distillation has been described (*Pharm. Journal*, iv., i., 501), which was lævo-rotatory – 27.

By fractionation, the sample yielded about 26 per cent., boiling between 200° and 210° C. No indication of camphor or borneol was obtained, but Thujone, boiling at 200° to 202° C., was found to be present.

These figures are practically identical with those obtained by fractionation of samples of American oil. Probably considerable differences are produced in the oil by the climate and soil on which the plant is grown, as this and the American oil differ markedly from the English sample referred to, distilled by Mr. J. C. Sawer, at Brighton.

Oil of tansy is not much used in this country, but the consumption of it in the United States is larger. It is quoted at about 16*s.* per lb. by the American distillers of repute.

No. 19.—OIL OF THYME OF THE ALPS.

This oil possessed (after removal of about 25 per cent. of added alcohol) the deep reddish-brown colour usually exhibited by the oils of high phenol-percentage distilled from *Thymus vulgaris*, L. It possessed a specific gravity of ·922 at 15° C. Its optical rotation could not be determined, owing to its dark colour.

It afforded on fractionation 37 per cent., boiling above 220° C., of which 21 per cent. passed over between 220° to 228°, consisting chiefly of thymol (B.P. 225° C.), whilst 12 per cent. distilled over between 230° to 234° C., which was principally Carvacrol (B.P. 232° C.).

The proportion of phenols was estimated by means of solution of caustic soda, and found to be about 33 per cent.

The following table shows a comparison of this oil with samples of red and white (re-distilled) varieties:—

Distilled in	Specific Gravity.	Boiling above 220° C.	Percentage of Phenols.	Remarks.
1. Dunolly.....	·922	37	33	Pure
2. France (Grasse)	·901	15	11	Mixed with oil of *Lavandula spica*
3. ,, ,,	·926	44	40·4	Pure
4. Germany, white....	·925	38	34	Pure

The above comparison shows, therefore, that the value of the Dunolly oil, as based on its phenol percentage, is considerable, and that it is particularly free from the oils of wild thyme (*Thymus serpyllum*) and spike (*Lavandula spica*), with which much of the thyme oil of commerce is mixed. The results which it has furnished, as compared with those obtained in the examination of the finest French oils, such as No. 3, indicate that it is of very good quality; its value at the present time being about 5*s.* per pound.

No. 20.—OIL OF VERVAIN.

This sample, which contained a considerable admixture of alcohol, possessed the characteristic odour of the so-called Verbena, or lemon-grass oil (*Andropogon spec*), although far more agreeable. The specimen under notice was, however, in all probability distilled from the common vervain (*Lippia citriodora*). The oil, after removal of alcohol, possessed a specific gravity of ·894 at 15° C., and an optical rotation of –16 in a tube of 100 M.m.

The fractionation of the oil under ordinary atmospheric pressure was unsatisfactory, as considerable decomposition took place, which might have been predicted from a knowledge of the constitution, principally aldehydic, of the oil.

Product obtained between:—

200–210° C.	30 per cent
210–225° C.	16 ,,
225–239° C.	16 ,,

Above 239 the decomposition became most marked.

The proportion of aldehydes in the sample was estimated by means of acid sodium sulphite, and found to amount to 74 per cent. The compound aldehyde-sodium acid sulphite was decomposed by means of caustic soda, carefully washed and dried, and showed all the characters of citral.

There can be no question that this oil would be of considerable value for soap and perfumery compounding if it could be produced at a sufficiently moderate price to compete with the Ceylon lemon-grass oil already referred to, the present value of which is 2*s.* 9*d.* per lb.

The results of the preliminary examination of the Dunolly oils and essences are decidedly encouraging, some of the products being of fine quality; all, except the oils of eucalyptus and sage, seem likely to be of commercial value. The question as to whether it would be profitable to export them is, however, a complicated one, but should be carefully considered in the light of the present report. A further supply of those oils which seem to promise well should be submitted to confirmatory experiments, since it is essential to know that they can be produced of uniform quality. It is also important that the best methods should be employed for extracting the oils from the plants, and with this object in view it may be desirable for an expert to proceed to Dunolly to advise on this subject, or for an official from Dunolly to visit manufactories here and on the Continent.—*Imperial Institute Journal.*

DOBELL'S SOLUTION IN HERPES ZOSTER.—Dobell's solution—the formula for which is acid carbolic, ℥iss.; sodii bibor., soda bicarb., *aa*, ℥ij.; glycerin, ℥ij.; aqua ad. Oij. M.—has been used successfully by Fullerton in the treatment of herpes zoster after the failure of other remedies. The solution was applied on absorbent cotton laid over the affected area.—*Therap. Gaz.* [3], xii., 504.

NOTES ON MICROSCOPY.

ZEISS MICROSCOPES are joys for ever, and would doubtless have been in much greater demand were it not that a stand with coarse adjustment by rack and pinion could not until recently be obtained for less than £7 10*s*. A smaller stand, however, is now supplied for £5 5*s*., and this when properly equipped with the necessary lenses will serve every purpose for students and even practising pharmacists. It has a fixed stage, 80 Mm. square, rack and pinion coarse adjustment, and micrometer screw fine adjustment. The stand inclines, and the tube when fully extended measures 160 Mm. long. Fitted with Zeiss achromatic objectives, A and D; Huyghenian oculars, Nos. 2 and 4, and a suitable condenser, the instrument is sufficiently complete for a student's use, whilst the further addition of a 1/12 inch oil immersion objective would make it suitable for all-round work in the pharmacy.

'THE METHODS OF MICROSCOPICAL RESEARCH,' by A. C. Cole, the second edition of which was recently published, is in reality a condensation of the author's excellent 'Studies in Microscopical Science.' It embodies the results of his thirty years' experience in microscopical work, all the formulæ from his private note-book, and all his special processes, etc. Instruments, reagents, and methods of preparation are described practically, whilst very complete instructions are given in regard to section-cutting, staining, and mounting.

A USEFUL CEMENT for affixing minute objects to thin glass covers, prior to mounting them in Canada balsam, is described in the above book. It is made by dissolving, in the cold, gum arabic, 2 grains, in distilled water, 1 ounce, then adding glacial acetic acid, 3 minims, and the least possible trace of sugar. Filter carefully through filter paper, and repeat the operation in a few weeks. This cement has been found to stand the test of use for many years, being quite unaffected by the balsam and also invisible, even under the highest powers.

SHELLAC CEMENT, according to Frederick Lester (*Western Druggist*), can be made by dissolving shellac in an equal weight of absolute alcohol, then pouring off the clear portion and adding to it a few drops of balsam of fir and castor oil, finally evaporating at a gentle heat to the proper consistence. But this is an extravagant process, since strong methylated spirit will serve as well as absolute alcohol, and if less be used there will be no need to evaporate.

GLYCERIN JELLY made by Gage's formula is said to be clear and bright:—Let gelatin, 25 Gm., stand in enough distilled water to cover it until softened, then pour off excess of water, and heat gelatin till dissolved. (Mem.—As the quantity of water taken up varies with the time, it is usually better to add four times the weight of the gelatin taken.) Next add white of egg, 5 C.c., to the melted gelatin, stir thoroughly, and heat till the albumin coagulates. Filter while hot, then add chloral hydrate, 5 Gm., and as much glycerin as the gelatin solution measures. Again heat gently and filter. The jelly is then ready for use.

WATSON AND SONS, LONDON, list a number of useful novelties in micro-apparatus, including "parachromatic" objectives, wherein a fair ratio of aperture to power is maintained for a moderate price; an excellent "parachromatic" condenser, N.A. 1·0, costing but little more than the ordinary achromatic condenser; and an improved Abbe model camera lucida in aluminium, the advantage gained by the use of this light metal being considerable. The Edinburgh Student's Microscope is now supplied in almost all conceivable styles, and should specially recommend itself to pharmacists.

NOTES AND FORMULÆ.

MOLYBDIC ACID TEST FOR ALCOHOL.

Merck proposes the following modification of Davy's test. Pure molybdic acid is dissolved in warm, strong sulphuric acid, and the resulting solution poured through the liquid under examination in a test-tube, both being kept at about 60° C. In the presence of alcohol a blue ring appears at the juncture of the liquids. This test will detect 0·02 per cent. of ethylic, and 0·2 per cent. of methylic alcohol in aqueous solution.—*Analyst*, xxi., 163, after *Chem. Zeit.*

"POLE" TEST PAPER FOR ELECTRICIANS.

Unglazed porous paper is first moistened with the following solution:—Phenolphthalein 1, methylated alcohol 10, distilled water to 100 parts, and dried. It is then again immersed in a 20 per cent. aqueous solution of sodium sulphate and again dried, and cut up into suitable small squares. On moistening the surface of this paper and bringing the ends of the wires on the moistened spot about half or one centimetre apart, a bright red spot will at once appear at the negative pole, due to the sodium there liberated. This reaction is obtained even with a very feeble current.—*Annales de Chim. Analyt.*, i., 270.

NEW METHOD OF DETECTING BORAX IN BUTTERS.

The following simple method, depending on the production of the well-known blue "bead," when borax and copper oxide are fused in contact, has been suggested by MM. Planchon and Vuaflart for the detection of borax in butter. Twenty grammes of butter are weighed in a porcelain dish, melted at a gentle heat, and dissolved in 10 C.c. of petroleum ether. The solution is transferred to a separator and the capsule washed out with more petroleum ether, then with several successive 10 C.cs. of water. These combined liquids are well shaken together in the separator, and the lower aqueous solution run off into a platinum dish, at first gently warmed, as the trace of ether causes foaming, then evaporated to dryness, and incinerated. To the ash 0·5 gramme of pure dry carbonate of potassium is added, melted and allowed to flow over the surface of the capsule. A very small quantity of porphyrised oxide of copper is now added, and the mass again fused. In the presence of borax it will assume on cooling a more or less intense blue colour. This test will show with ease the presence of two per 1000 of borax.—*Journ. de Pharm.* [6], iv., 50.

ANTISEPTIC GAUZE.

Martensen prepares antiseptic dressings as follows. Rolls of cheese-cloth about thirty yards long are folded and placed in jars on them is poured the following solutions according to the kind of gauze to be made:—*Carbolised gauze, five per cent.*—Colophene, 50; castor oil, 15; carbolic acid, 28; alcohol 90°, 207 parts; 300 parts by weight of this mixture are used for 500 parts of gauze: or the following may be used:—Vaseline, 30 parts; carbolic acid, 28; benzin, 242 parts; 300 parts for 500 of gauze. *Thymolised gauze.*—Thymol, 10; Turpentine, 3; paraffin oil, 10; benzin, 200 parts; 303 to 500 parts of gauze. *Sublimated gauze.*—Bichloride of mercury, 1½; sodium chloride, ½; glycerin, 15; distilled water, 500 parts. Equal parts of solution and gauze. *Iodoform gauze.*—Iodoform, 50; paraffin oil, 10; ether, 460 parts: 460 parts of solution to 500 of gauze. In each case the gauze is allowed to soak for twelve hours, then dried and stored in air-tight jars.—*Therap. Gaz.* [3], xii., 407, after *Med. Mod.*

PHARMACEUTICAL JOURNAL.

A Weekly Record of Pharmacy and Allied Sciences.

ESTABLISHED 1841.

Circulating in the United Kingdom, France, Germany, Austria, Italy, Russia, Switzerland, Canada, the United States, South America, India, Australasia, South Africa, etc.

Editorial Office: 17, BLOOMSBURY SQUARE, W.C.
Publishing and Advertising Office: 5, SERLE STREET, W.C.

LONDON: SATURDAY, SEPTEMBER 19, 1896.

PREVENTION AS AN AID TO CURE.

The trend of modern medicine may be fitly summed up in the old adage "Prevention is better than cure," but in cases where the aid of surgery is needed, absolute prevention is of course out of the question, and the problem that presents itself for consideration is how to prevent further mischief. Nature's plan, the simplicity of which only commended itself to man after centuries of treatment by crude and unscientific methods, is to adopt what may be described as a policy of relative non-interference. Human methods, on the other hand, consisted for a very prolonged period in interfering with the healing process in every conceivable way. In the end, however, Nature has triumphed, man has been compelled to recognise the advantages of her plan, and as improvements upon this plan the methods of antisepsis and asepsis have gradually been evolved. These when conjoined realise the natural method in an ideally perfect form, in cases where Nature herself would probably fail. The union of cut surfaces by what surgeons term "first intention," when the severed flesh unites rapidly and painlessly without inflammation, fairly illustrates what has been termed Nature's method, at its best. Here the desired result is attained without any drawback. But the introduction of the complications leading to healing by granulation and cicatrisation, the only other method of complete recovery, is often accompanied by inflammation due to decomposition of blood within the wound. This renders the process of healing tedious and uncertain, and has only too often been attended with fatal results in time past. The introduction of the antiseptic and aseptic methods, however, has enabled surgeons to prevent serious complications arising, and as a result important operations are now conducted with the greatest facility, accompanied by a practical certainty of immunity from suffering and death.

How this happy state of affairs has come about, Sir Joseph Lister informed the members of the British Association in his presidential address on Wednesday. The dread of being accused of self-advertisement has prevented him entering upon full consideration of the matter heretofore, but no one will regret that he has now felt impelled to break silence with regard to his own magnificent achievements. At the outset, he made it clear that Pasteur's work on fermentation must be taken as the starting point in dealing with this matter, and no stronger testimony can be afforded of the value of research for its own sake, quite irrespective of its ultimate results, than by the picture Sir Joseph Lister gives us of the young Frenchman—already, in spite of his comparative youth, Dean of the Faculty of Sciences in the University of Lille—entering upon an investigation, the outcome of which was to prove more important and far-reaching in its results than the greatest war the world has ever seen. Commencing with the study of the products of alcoholic fermentation, Pasteur found out how microbes act by decomposing organic substances, and proved that the decompositions observed during fermentation cannot occur except in the presence of those microbes. He was thus led to estimate the enormous importance of these humble organisms in the economy of Nature, showing that by their agency the dead bodies of plants and animals become resolved into simpler compounds fitted for assimilation by new living forms. As a logical outcome of these results Pasteur's labours had a very important influence upon surgery, for it was soon seen that putrefaction must be closely akin to fermentation.

Meanwhile, Sir Joseph Lister had become impressed with the fact that exposure of injured parts to external influences was in some way the cause of the difficulties that arise in connection with the healing of wounds involving rupture of the skin. Scrupulous ordinary cleanliness and the use of various deodorant lotions failed to prevent inflammation altogether. But a fresh aspect was put upon the problem when Pasteur had shown that putrefaction was a fermentation caused by the growth of microbes, and the eminent English surgeon at once set to work to apply in surgical practice the principles thus arrived at as the result of research for truth's sake. Carbolic acid was the first compound experimented with as an antiseptic, and the experimenter had the joy of seeing compound fractures follow "the same safe and tranquil course" as simple fractures, in which the skin remains unbroken. As years have passed great improvements have been witnessed in the appliances used for carrying out the antiseptic principle, but carbolic acid yet remains the best agent for purifying the skin around wounds. Next, as the result of observations made whilst experimenting with this pioneer amongst antiseptics, the idea of using dead animal tissue for tying blood vessels was suggested, and properly-prepared cat-gut was found to answer the purpose completely. Later, Sir Joseph was able to prove that atmospheric dust is harmless in surgical operations, and subsequent experience has proved that irritation of wounds by antiseptic irrigation and washing is needless, Nature being best left quite undisturbed to carry out her best methods of repair, while the surgeon may conduct his operations with the greatest simplicity, provided always that he vigilantly maintains the use of the simple means that suffice to exclude from the wound the coarser forms of septic impurity. As a result of the earlier and ruder methods of antisepsis, Lister's surgical wards in Glasgow Royal Infirmary became the healthiest in the world, after being amongst the most unhealthy in the kingdom, and the wonderful preventive effects of the new mode of treatment are now seen in every hospital in the world. Not only in this, however, but in many and varied ways does mankind labour under a heavy load of indebtedness to Pasteur and Lister, the one essentially a seeker after truth for its own sake, and the other better known as a skilful adapter of scientific principles to the healing art. May the world never lack representatives of both classes!

ANNOTATIONS.

Jury Lists are now being exhibited on church doors, and pharmaceutical chemists actually in practice should examine those lists to see that their names are not included with those of persons liable to serve on juries. If by any chance a pharmaceutical chemist should find himself among the prospective jurors he should at once notify to the Overseers of his parish his objection, and the grounds for claiming exemption from service. It is important that persons claiming exemption should make themselves secure now, for if they allow the list to go unchallenged no amount of pleading will excuse their attendance at any jury to which they may be summoned. Pharmacists unable to convince the local officials of the validity of their claim to be excused should apply to the Registrar of the Pharmaceutical Society for a certificate of registration as a pharmaceutical chemist.

The Criticism on the Examinations by Mr. F. P. Sargeant will doubtless be read in a sympathetic mood by many. On this subject competent criticism is all powerful, for it must be remembered that pharmacists arrange and control the examinations, whilst also constituting the majority on each Board of Examiners. The necessity of constantly maintaining the examination standard at high water mark is quite sufficient reason for regularly discussing the topic from time to time, and if necessity pipes the tune there is never any lack of individuals prepared to dance. In the paper by Mr. Bridges (*ante*, p. 220) a remedy for one deficiency noted by Mr. Sargeant was described, but other points suggested by the latter afford ground for much thought.

Temperance Drinks containing more alcohol than ordinary beer are not encouraged by the Board of Inland Revenue, but of late horehound beer has shown a remarkable tendency to intoxicate. At Barton (Lincs.) a fruiterer was fined last week for selling a bottle of this nectar of the temperance gods, because it contained the equivalent of 6 per cent. of proof spirit. In Preston, again, there are more than five hundred retailers of "temperance" drinks, and of one hundred samples recently taken there fifty were excessively strong in alcohol. Mr. Rossiter, of the Inland Revenue Department, says it is his experience that the consumers of these so-called temperance drinks liked it all the more when it has plenty of spirit in it. It is the wish of the authorities to get at the manufacturers, but the wholesale dealers always manage to get rid of the drink before fermentation has fully developed, and it has been calculated that half a million sterling is lost to the country each year through the duty on such drinks being uncollected.

Microscopes and Balances made in Germany, a writer in the *Saturday Review* points out, have gained a firm footing in England, because the foreign makers have offered better value for the prices asked. Moreover, they have not taken the place of similar English goods, but supplied wants that could not formerly be gratified. English scientific instrument makers have only quite recently begun to realise that it may pay them better to cater for the thousands who can spare five pounds or less at once than the few score who can afford twenty to fifty pounds. As good, and often better, value is now offered by home manufacturers in this line, as compared with their foreign competitors, but they have a great amount of leeway to make up. Protection and technical education will not help in this direction. What is wanted is "a mission to our merchants and manufacturers to enlarge their circles of ideas. That enlargement attained, they will see to technical education as a matter of course, and they will require no other protection."

The British Association meeting at Liverpool commenced on Wednesday, and the presidential address (see p. 262) then delivered was of extreme interest. In dealing with the influence of recent science upon medicine, it was natural that Sir Joseph Lister should devote considerable attention to the applications in medical practice of Röntgen's discovery of the so-called *x*-rays. The jubilee of anæsthesia was also too important an occasion to be lightly passed over, whilst an appreciative summary of Pasteur's work on fermentation led directly to an explanation of the influence of that work on surgery, and a modest account of the crowning of the speaker's own life-work by his introduction of the antiseptic principle into surgical practice. But Sir Joseph's self-set task was to praise the work of others and not his own. Thus, Koch, Jenner, Roux, Yersin, Löffler, Kitasato, Ehrlich, Calmette, Behring, Fraser, and Metchnikoff received due credit for their respective investigations and results, whilst the name of Pasteur recurred throughout the address like the sad refrain that haunted Heine when in imagination he visited the abodes of the damned. The refrain in this case, however, was hopeful and not despairing, for it dealt with the successful outcome of the great conflict with disease and death that has for so many years past been waged by the great French investigator and his disciples. No more interesting presidential address has ever been delivered before the Association.

Pyrogallic Acid is one of the most commonly used chemicals in the photographic laboratory and, as is usual under such conditions, familiarity with the preparation is apt to induce forgetfulness of the fact that it possesses toxic properties. Doubtless too, many amateur photographers are entirely ignorant of the fact that the acid is poisonous. This is a point for chemists and druggists to make clear when they sell the article, as the use of a poison label may have the effect of causing purchasers to exercise greater care. In a sad case reported from Nutley, the young wife of a medical man who indulged in photography died from the effects of the following solution:—Pyrogallic acid, 1 oz.; nitric acid, 20 drops; water to 6 oz. The bottle containing this had been kept upon the dining-room sideboard, where a bottle of tonic medicine was also standing. Deceased went to take a dose of the medicine in the dark and drank 1½ oz. of the pyro. solution instead. Death occurred from perforation of the stomach, four days later. Neither the husband nor the medical man called in knew anything about the poisonous effects of pyrogallic acid, and this is believed to be the first fatal case due to its use, though the irritant effects of the acid are well known. The present addition to our knowledge obviously suggests the advisability of extending the use of poison labels.

Mr. A. Braxton Hicks, who appears to have been in an effervescent mood, was reported last week as having censured the conduct of an absent man for an imaginary offence. The widow of an individual who foolishly drank belladonna liniment in mistake for a mixture, being worried and confused when giving evidence at the Coroner's Court, gave the unfounded impression that Mr. A. H. Dee, chemist and druggist, Wandsworth, had prescribed for her husband. The Coroner, finding the chemist was not present, proceeded at once to comment upon the iniquity of his proceedings, and adjourned the inquest for his attendance. On resuming, however, it was clearly proved that all Mr. Dee had done was to dispense a physician's prescription. The threatened storm subsided, therefore, and the Coroner and jury, quite unnecessarily, told the chemist he was free from blame. When will the whole tribe of coroners learn to attend to their proper business exclusively, simply ascertaining the cause of death and abstaining from dealing with extraneous topics?

The Manchester Pharmaceutical Association Scholarship, we are desired to point out, may be held in the Pharmaceutical Society's School of Pharmacy or "any" provincial school of pharmacy approved by the Council of the Society. In the particulars published last week concerning University College, Liverpool, and Owens College, Manchester, it was stated that the scholarship "may" be held in those institutions. The statement was purposely made conditional, and as such is quite correct, but of course other schools might have claimed the same privilege. In reply to an objection (not emanating from a school) that an invidious comparison has been drawn between those two institutions and others, we can only say that equal opportunities for conveying information were offered in all cases. When advantages were not claimed for particular institutions, it was not the Editor's business to supply the deficiency.

"The Chemistry of Pharmaceutical Preparations" is the title of a course of twenty lectures to be delivered at the Municipal Technical School, Manchester, by Dr. L. Marchlewski, late assistant in the Technical Laboratory of the Polytechnic at Zurich. This preliminary course, intended for medical men and chemists and druggists, will deal with the constitution and preparation of recently introduced chemical medicaments. Commencing with a lecture on isomerism and kindred topics, Dr. Marchlewski will then in turn treat of fatty hydrocarbons, alcohols, oxides, ethers, aldehydes, ketones, amines, phenols, natural alkaloids, terpenes, colouring matters, etc., together with their derivatives and typical reactions. The fee for the course is 7*s.* 6d. only, and it is proposed to give a more advanced course next session.

Poisoning Cases in Scotland.—Referring to the case of an elderly woman who was found early on Wednesday morning, 9th inst., lying in an insensible condition in the Queen's Park, Edinburgh, a correspondent says it was found that she was suffering from laudanum poisoning, two empty laudanum phials, which had been obtained in different shops, being found beside her. She was removed to the Royal Infirmary, where she lies in a precarious condition. Poisoning cases, it is stated, have been somewhat frequent in the district of late, and in several cases the poison seems to have been obtained by purchasing small quantities in several shops. Pharmacists cannot be too careful as to the selling of scheduled poisons to persons likely to make an improper use of them, even though the quantity asked for may seem too small to be by itself dangerous. A skilled pharmacist can generally judge of the character of the individual who meditates suicide, and he ought to satisfy himself before he supplies even a non-fatal quantity to such an individual.

"What it Costs to be Vaccinated" is but too well known to most of us, but in a book bearing this title Mr. Joseph Collinson attempts to prove that the bill is a truly inordinate one. As may be imagined, he objects to the pains and penalties of an "unjust law," and urges "the immediate abrogation of the iniquitous penal laws enforced by the Acts of Parliament of 1853, 1867, and 1871, together with the disestablishment and disendowment by the Government of the practice of vaccination." The publication of this essay by the Humanitarian League is well timed, since it appears simultaneously with the Report of the Royal Commission on Vaccination. With regard to the value of vaccination, however, and whether that value is sufficiently great to justify the elevation of the operation into a medical fetish, this is not a fitting place to speak.

The Answers to Queries supplied in the Journal week by week appear to be appreciated in an increasing degree, as witness the letter of a correspondent, who says: "The assistance you give in your answers is very valuable, as they are not of the rough and ready type so common in such cases." The specialists engaged in the onerous task of replying to questions and devising formulæ are duly encouraged by this and other gratifying indications of the success attending their efforts, and readers are invited to prove that their appreciation of the assistance given is genuine by asking like Oliver Twist for more.

The Pharmaceutical Classes to be held at University College, Nottingham, in connection with the Nottingham and Notts Chemists' Association (see *ante*, p. 238), include a course of lectures and demonstrations in botany for pharmaceutical students, by Professor Carr, M.A., and Mr. E. A. Smith, B.Sc., on Tuesday evenings, from 8 to 9.30, throughout the session, beginning on Tuesday, September 29. In the first and second terms the instruction will consist each evening of an hour's lecture on elementary, structural, and physiological botany, followed by half-an-hour's practical demonstration on the subject of the lecture. In the third term, practical demonstrations in systematic botany will be given. The course will be fully illustrated by lantern-slides and microscopic and other preparations. A course of twelve class meetings in practical dispensing will be held on Monday evenings, from 8.30 to 10, beginning on Monday, January 11, and will extend through the second college term. After half-an-hour's demonstration by the teacher, the students will adjourn to the chemical laboratory for practical work. In practical chemistry, owing to the larger amount of chemical work now required of candidates for the Minor examination, students are strongly recommended to enter the College chemical laboratory, as ordinary students, for a second session. The classes conducted by the Nottingham Association have been among the most successful in the country, and as the fees amount to only 7*s.* 6*d.* per course in each subject, the attendance of pharmaceutical students should be great.

"The New Saturday" is the title of the latest literary experiment, which deserves success whether it attains it or not. It is a sixpenny weekly containing forty-eight pages, and proposes to deal with "literature, finance and independent politics." The last mentioned may strike many people as being somewhat of a curiosity, and it is curious how the opinions of independent politicians tend towards conservatism, *i.e.*, when the independence is not merely nominal. The first number of the *New Saturday*, dated September 12, is distinctly readable and interesting throughout, and pharmacists who have time to spare after discussing the varied fare offered in our own pages may do worse than turn to those of our new contemporary. Variety is the spice of life.

Pharmacy in Natal is now controlled by an Act—"To Amend the Laws Relating to Medical Practitioners and Apothecaries"—which is partly the outcome of a movement on the part of the Natal pharmacists to attempt to improve their status. A Pharmacy Board is to be appointed to conduct examinations and a Register of Chemists and Druggists kept, British certificates being amongst those accepted as evidence of qualification. A Schedule of Poisons is also legalised. This is on the lines of that familiar to our readers, but carbolic acid is included in Division II. Another Schedule includes a list of articles that anyone may sell, even though containing poisons scheduled in the former list.

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

PRESIDENTIAL ADDRESS AT LIVERPOOL

BY

SIR JOSEPH LISTER, BART., D.C.L., LL.D., P.R.S.

MODERN SCIENCE IN MEDICAL AND SURGICAL PRACTICE.

I have first to express my deep sense of gratitude for the great honour conferred upon me by my election to the high office which I occupy to-day. It came upon me as a great surprise. The engrossing claims of surgery have prevented me for many years from attending the meetings of the Association, which excludes from her sections medicine in all its branches. This severance of the art of healing from the work of the Association was right, and indeed inevitable. Not that medicine has little in common with science. The surgeon never performs an operation without the aid of anatomy and physiology, and in what is often the most difficult part of his duty, the selection of the right course to follow, he, like the physician, is guided by pathology, the science of the nature of disease, which, though very difficult from the complexity of its subject matter, has made during the last half-century astonishing progress, so that the practice of medicine in every department is becoming more and more based on science as distinguished from empiricism.

IMPORTANCE OF THE RÖNTGEN RAYS.

I propose on the present occasion to bring before you some illustrations of the interdependence of science and the healing art, and the first that I will take is perhaps the most astonishing of all results of purely physical inquiry—the discovery of the Röntgen rays, so called after the man who first clearly revealed them to the world. Mysterious as they still are, there is one of their properties which we can all appreciate—their power of passing through substances opaque to ordinary light. There seems to be no relation whatever between transparency in the common sense of the term and penetrability to these emanations. The glasses of a pair of spectacles may arrest them while their wooden and leathern case allows them to pass almost unchecked. Yet they produce, whether directly or indirectly, the same effects as light upon a photographic plate. As a general rule the denser any object is the greater obstacle does it oppose to the rays. Hence, as bone is denser than flesh, if the hand or other part of the body is placed above the sensitive film enclosed in a case of wood or other light material at a suitable distance from the source of the rays, while they pass with the utmost facility through the uncovered parts of the lid of the box and powerfully affect the plate beneath, they are arrested to a large extent by the bones, so that the plate is little acted upon in the parts opposite to them, while the portions corresponding to the muscles and other soft parts are influenced in an intermediate degree. Thus a picture is obtained in which the bones stand out in sharp relief among the flesh, and anything abnormal in their shape or position is clearly displayed.

I need hardly point out what important aid this must give to the surgeon. As an instance, I may mention a case which occurred in the practice of Mr. Howard Marsh. He was called to see a severe injury of the elbow, in which the swelling was so great as to make it impossible for him by ordinary means of examination to decide whether he had to deal with a fracture or a dislocation. If it were the latter, a cure would be effected by the exercise of violence, which would be not only useless but most injurious if a bone was broken. By the aid of the Röntgen rays a photograph was taken in which the bone of the upper arm was clearly seen displaced forwards on those of the forearm. The diagnosis being thus established, Mr. Marsh proceeded to reduce the dislocation; and his success was proved by another photograph which showed the bones in their natural relative position.

The common metals, such as lead, iron, and copper, being still denser than the osseous structures, these rays can show a bullet embedded in a bone or a needle lodged about a joint. At the last conversazione of the Royal Society a picture produced by the new photography displayed with perfect distinctness through the bony framework of the chest a halfpenny low down in a boy's gullet. It had been there for six months, causing uneasiness at the pit of the stomach during swallowing; but whether the coin really remained impacted, or, if so, what was its position, was entirely uncertain till the Röntgen rays revealed it. Dr. Macintyre, of Glasgow, who was the photographer, informs me that when the presence of the halfpenny had been thus demonstrated, the surgeon in charge of the case made an attempt to extract it, and although this was not successful in its immediate object, it had the effect of dislodging the coin; for a subsequent photograph by Dr. Macintyre not only showed that it had disappeared from the gullet, but also, thanks to the wonderful penetrating power which the rays had acquired in his hands, proved that it had not lodged further down in the alimentary passage. The boy has since completely recovered.

The Röntgen rays cause certain chemical compounds to fluoresce, and emit a faint light plainly visible in the dark; and if they are made to fall upon a translucent screen impregnated with such a salt, it becomes beautifully illuminated. If a part of the human body is interposed between the screen and the source of the rays, the bones and other structures are thrown in shadow upon it, and thus a diagnosis can be made without the delay involved in taking a photograph. It was, in fact, in this way that Dr. Macintyre first detected the coin in the boy's gullet. Mr. Herbert Jackson, of King's College, London, early distinguished himself in this branch of the subject. There is no reason to suppose that the limits of the capabilities of the rays in this way have yet been reached. By virtue of the greater density of the heart than the adjacent lungs with their contained air, the form and dimensions of that organ in the living body may be displayed on the fluorescent screen, and even its movements have been lately seen by several different observers.

Such important applications of the new rays to medical practice have strongly attracted the interest of the public to them, and I venture to think that they have even served to stimulate the investigations of physicists. The eminent Professor of Physics in the University College of this city (Professor Lodge) was one of the first to make such practical applications, and I was able to show to the Royal Society at a very early period a photograph, which he had the kindness to send me, of a bullet embedded in the hand. His interest in the medical aspect of the subject remains unabated, and at the same time he has been one of the most distinguished investigators of its purely physical side.

There is another way in which the Röntgen rays connect themselves with physiology, and may possibly influence medicine. It is found that if the skin is long exposed to their action it becomes very much irritated, affected with a sort of aggravated sun-burning. This suggests the idea that the transmission of the rays through the human body may be not altogether a matter of indifference to internal organs, but may, by long-continued action, produce, according to the condition of the part concerned, injurious irritation or salutory stimulation.

THE JUBILEE OF ANÆSTHESIA.

This is the jubilee of anæsthesia in surgery. That priceless blessing to mankind came from America. It had, indeed, been foreshadowed in the first year of this century by Sir Humphrey Davy, who, having found a toothache from which he was suffering relieved as he inhaled laughing gas (nitrous oxide), threw out the suggestion that it might perhaps be used for preventing pain in surgical operations. But it was not till, on September 30, 1846, Dr. W. T. G. Morton, of Boston, after a series of experiments upon himself and the lower animals, extracted a tooth painlessly from a patient whom he had caused to inhale the vapour of sulphuric ether, that the idea was fully realised. He soon afterwards publicly exhibited his method at the Massachusetts General Hospital, and after that event the great discovery spread rapidly over the civilised world. I witnessed the first operation in England under ether. It was performed by Robert Liston in University College Hospital, and it was a complete success. Soon afterwards I saw the same great surgeon amputate the thigh as painlessly, with less complicated anæsthetic apparatus, by aid of another agent, chloroform, which was being powerfully advocated as a substitute for ether by Dr. (afterwards Sir James Y.) Simpson, who also had the great merit of showing that confinements could be conducted painlessly, yet safely, under its influence. These two agents still hold the field as general anæsthetics for protracted operations, although the gas originally suggested by Davy, in consequence of its rapid action and other advantages, has taken their place in short operations, such as tooth extraction. In the birthplace of anæsthesia ether has always maintained its ground; but in Europe it was to a large extent displaced by chloroform till recently, when many have returned to ether, under the idea that, though less convenient, it is safer. For my

own part, I believe that chloroform, if carefully administered on right principles, is, on the average, the safer agent of the two.

The discovery of anæsthesia inaugurated a new era in surgery, Not only was the pain of operations abolished, but the serious and sometimes mortal shock which they occasioned to the system was averted, while the patient was saved the terrible ordeal of preparing to endure them. At the same time the field of surgery became widely extended, since many procedures in themselves desirable, but before impossible from the protracted agony they would occasion, became matters of routine practice. Nor have I by any means exhausted the list of the benefits conferred by this discovery.

Anæsthesia in surgery has been from first to last a gift of science. Nitrous oxide, sulphuric ether, and chloroform are all artificial products of chemistry, their employment as anæsthetics was the result of scientific investigation, and their administration, far from being, like the giving of a dose of medicine, a matter of rule of thumb, imperatively demands the vigilant exercise of physiological and pathological knowledge.

While rendering such signal service to surgery, anæsthetics have thrown light upon biology generally. It has been found that they exert their soporific influence not only upon vertebrata, but upon animals so remote in structure from man as bees and other insects. Even the functions of vegetables are suspended by their agency. They thus afford strong confirmation of the great generalisation that living matter is of the same essential nature wherever it is met with on this planet, whether in the animal or vegetable kingdom. Anæsthetics have also, in ways to which I need not here refer, powerfully promoted the progress of physiology and pathology.

PASTEUR'S WORK ON FERMENTATION.

My next illustration may be taken from the work of Pasteur on fermentation. The prevailing opinion regarding this class of phenomena when they first engaged his attention was that they were occasioned primarily by the oxygen of the air acting upon unstable animal or vegetable products, which, breaking up under its influence, communicated disturbance to other organic materials in their vicinity, and thus led to their decomposition. Cagniard-Latour had indeed shown several years before that yeast consists essentially of the cells of a microscopic fungus which grows as the sweetwort ferments; and he had attributed the breaking up of the sugar into alcohol and carbonic acid to the growth of the micro-organism. In Germany Schwann, who independently discovered the yeast plant, had published very striking experiments in support of analogous ideas regarding the putrefaction of meat. Such views had also found other advocates, but they had become utterly discredited, largely through the great authority of Liebig, who bitterly opposed them.

Pasteur, having been appointed as a young man Dean of the Faculty of Sciences in the University of Lille, a town where the products of alcoholic fermentation were staple articles of manufacture, determined to study that process thoroughly; and as a result he became firmly convinced of the correctness of Cagniard-Latour's views regarding it. In the case of other fermentations, however, nothing fairly comparable to the formation of yeast had till then been observed. This was now done by Pasteur for that fermentation in which sugar is resolved into lactic acid. This lactic fermentation was at that time brought about by adding some animal substance, such as fibrin, to a solution of sugar, together with chalk that should combine with the acid as it was formed. Pasteur saw, what had never before been noticed, that a fine grey deposit was formed, differing little in appearance from the decomposing fibrin, but steadily increasing as the fermentation proceeded. Struck by the analogy presented by the increasing deposit to the growth of yeast in sweetwort, he examined it with the microscope, and found it to consist of minute particles of uniform size. Pasteur was not a biologist, but although these particles were of extreme minuteness in comparison with the constituents of the yeast plant, he felt convinced that they were of an analogous nature, the cells of a tiny microscopic fungus. This he regarded as the essential ferment, the fibrin or other so-called ferment serving, as he believed, merely the purpose of supplying to the growing plant certain chemical ingredients not contained in the sugar but essential to its nutrition. And the correctness of this view he confirmed in a very striking manner, by doing away with the fibrin or other animal material altogether, and substituting for it mineral salts containing the requisite chemical elements. A trace of the grey deposit being applied to a solution of sugar containing these salts in addition to the chalk, a brisker lactic fermentation ensued than could be procured in the ordinary way.

I have referred to this research in some detail because it illustrates Pasteur's acuteness as an observer and his ingenuity in experiment, as well as his almost intuitive perception of truth.

A series of other beautiful investigations followed, clearly proving that all true fermentations, including putrefaction, are caused by the growth of micro-organisms.

It was natural that Pasteur should desire to know how the microbes which he showed to be the essential causes of the various fermentations took their origin. It was at that period a prevalent notion, even among many eminent naturalists, that such humble and minute beings originated *de novo* in decomposing organic substances; the doctrine of spontaneous generation, which had been chased successfully from various positions which it once occupied among creatures visible to the naked eye, having taken its last refuge where the objects of study were of such minuteness that their habits and history were correspondingly difficult to trace. Here again Pasteur at once saw, as if by instinct, on which side the truth lay; and, perceiving its immense importance, he threw himself with ardour into its demonstration. I may describe briefly one class of experiments which he performed with this object. He charged a series of narrow-necked glass flasks with a decoction of yeast, a liquid peculiarly liable to alteration on exposure to the air. Having boiled the liquid in each flask, to kill any living germs it might contain, he sealed its neck with a blowpipe during ebullition; after which the flask being allowed to cool, the steam within it condensed, leaving a vacuum above the liquid. If, then, the neck of the flask were broken in any locality, the air at that particular place would rush in to fill the vacuum, carrying with it any living microbes that might be floating in it. The neck of the flask having been again sealed, any germs so introduced would in due time manifest their presence by developing in the clear liquid. When any of such a series of flasks were opened and re-sealed in an inhabited room, or under the trees of a forest, multitudes of minute living forms made their appearance in them; but if this was done in a cellar long unused, where the suspended organisms, like other dust, might be expected to have all fallen to the ground, the decoction remained perfectly clear and unaltered. The oxygen and other gaseous constituents of the atmosphere were thus shown to be of themselves incapable of inducing any organic development in yeast-water.

Such is a sample of the many well-devised experiments by which he carried to most minds the convictions that, as he expressed it, "*la génération spontanée est une chimère*," and that the humblest and minutest living organisms can only originate by parentage from beings like themselves.

Pasteur pointed out the enormous importance of these humble organisms in the economy of nature. It is by their agency that the dead bodies of plants and animals are resolved into simpler compounds fitted for assimilation by new living forms. Without their aid the world would be, as Pasteur expresses it, *encombré de cadavres*. They are essential not only to our well-being, but to our very existence. Similar microbes must have discharged the same necessary function of removing refuse and providing food for successive generations of plants and animals during the past periods of the world's history; and it is interesting to think that organisms as simple as can well be conceived to have existed when life first appeared upon our globe have, in all probability propagated the same lowly but most useful offspring during the ages of geological time.

INFLUENCE OF PASTEUR'S WORK ON SURGERY.

Pasteur's labours on fermentation have had a very important influence upon surgery. I have often been asked to speak on my share in this matter before a public audience; but I have hitherto refused to do so, partly because the details are so entirely technical, but chiefly because I have felt an invincible repugnance to what might seem to savour of self-advertisement. The latter objection now no longer exists, since advancing years have indicated that it is right for me to leave to younger men the practice of my dearly loved profession. And it will perhaps be expected that, if I can make myself intelligible, I should say something upon the subject on the present occasion.

Nothing was formerly more striking in surgical experience than the difference in the behaviour of injuries according to whether the skin was implicated or not. Thus, if the bones of the leg were broken and the skin remained intact, the surgeon applied the necessary apparatus without any other anxiety than that of maintaining a good position of the fragments, although the internal injury to bones and soft parts might be very severe. If, on the other hand, a wound of the skin was present communicating with

the broken bones, although the damage might be in other respects comparatively slight, the compound fracture, as it was termed, was one of the most dangerous accidents that could happen. Mr. Syme, who was, I believe, the safest surgeon of his time, once told me that he was inclined to think that it would be, on the whole, better if all compound fractures of the leg were subjected to amputation, without any attempt to save the limb. What was the cause of this astonishing difference? It was clearly in some way due to the exposure of the injured parts to the external world. One obvious effect of such exposure was indicated by the odour of the discharge, which showed that the blood in the wound had undergone putrefactive change by which the bland nutrient liquid had been converted into highly irritating and poisonous substances. I have seen a man with compound fracture of the leg die within two days of the accident, as plainly poisoned by the products of putrefaction as if he had taken a fatal dose of some potent toxic drug.

An external wound of the soft parts might be healed in one of two ways. If its surfaces were clean cut and could be brought into accurate apposition, it might unite rapidly and painlessly "by the first intention." This, however, was exceptional. Too often the surgeon's efforts to obtain primary union were frustrated: the wound inflamed and the retentive stitches had to be removed, allowing it to gape; and then, as if it had been left open from the first, healing had to be effected in the other way which it is necessary for me briefly to describe. An exposed raw surface became covered in the first instance with a layer of clotted blood or certain of its constituents, which invariably putrefied, and the irritation of the sensitive tissues by the putrid products appeared to me to account sufficiently for the inflammation which always occurred in and around an open wound during the three or four days which elapsed before what were termed "granulations" had been produced. These constituted a coarsely granular coating of very imperfect or embryonic structure, destitute of sensory nerves, and prone to throw off matter or pus, rather than absorb, as freshly divided tissues do, the products of putrefaction. The granulations thus formed a beautiful living plaster, which protected the sensitive parts beneath from irritation, and the system generally from poisoning and consequent febrile disturbance. The granulations had other useful properties, of which I may mention their tendency to shrink as they grew, thus gradually reducing the dimensions of the sore. Meanwhile, another cause of its diminution was in operation. The cells of the epidermis or scarf-skin of the cutaneous margins were perpetually producing a crop of young cells of similar nature, which gradually spread over the granulations till they covered them entirely, and a complete cicatrix or scar was the result. Such was the other mode of healing that by granulation and cicatrisation; a process which, when it proceeded unchecked to its completion, commanded our profound admiration. It was, however, essentially tedious compared with primary union, while, as we have seen, it was always preceded by more or less inflammation and fever, sometimes very serious in their effects. It was also liable to unforeseen interruptions. The sore might become larger instead of smaller, cicatrisation giving place to ulceration in one of its various forms, or even to the frightful destruction of tissue, which, from the circumstance that it was most frequently met with in hospitals, was termed hospital gangrene. Other serious, and often fatal, complications might arise, which the surgeon could only regard as untoward accidents, and over which he had no efficient control.

It will be readily understood from the above description that the inflammation which so often frustrated the surgeon's endeavours after primary union was in my opinion essentially due to decomposition of blood within the wound.

The Evil of Putrefaction in Surgery.

These and many other considerations had long impressed me with the greatness of the evil of putrefaction in surgery. I had done my best to mitigate it by scrupulous ordinary cleanliness and the use of various deodorant lotions. But to prevent it altogether appeared hopeless, while we believed with Liebig that its primary cause was the atmospheric oxygen, which, in accordance with the researches of Graham, could not fail to be perpetually diffused through the porous dressings which were used to absorb the blood discharged from the wound. But when Pasteur had shown that putrefaction was a fermentation caused by the growth of microbes, and that these could not arise *de novo* in the decomposable substance, the problem assumed a more hopeful aspect. If the wound could be treated with some substance which, without doing too serious mischief to the human tissues, would kill the microbes already contained in it and prevent the future access of others in the livin state, putrefaction might be prevented, however freely the air with its oxygen might enter. I had heard of carbolic acid as having a remarkable deodorising effect upon sewage, and having obtained from my colleague Dr. Anderson, Professor of Chemistry in the University of Glasgow, a sample which he had of this product, then little more than a chemical curiosity in Scotland, I determined to try it in compound fractures. Applying it undiluted to the wound, with an arrangement for its occasional renewal, I had the joy of seeing these formidable injuries follow the same safe and tranquil course as simple fractures, in which the skin remains unbroken.

At the same time we had the intense interest of observing in open wounds what had previously been hidden from human view, the manner in which subcutaneous injuries are repaired. Of special interest was the process by which portions of tissue killed by the violence of the accident were disposed of, as contrasted with what had till then been invariably witnessed. Dead parts had been always seen to be gradually separated from the living by an inflammatory process and thrown off as sloughs. But when protected by the antiseptic dressing from becoming putrid and therefore irritating, a structure deprived of its life caused no disturbance in its vicinity; and, on the contrary, being of a nutritious nature, it served as pabulum for the growing elements of the neighbouring living structures, and these became in due time entirely substituted for it. Even dead bone was seen to be thus replaced by living osseous tissue.

This suggested the idea of using threads of dead animal tissue for tying blood-vessels; and this was realised by means of catgut, which is made from the intestine of the sheep. If deprived of living microbes, and otherwise properly prepared, catgut answers its purpose completely; the knot holding securely, while the ligature around the vessel becomes gradually absorbed and replaced by a ring of living tissue. The threads, instead of being left long as before, could now be cut short, and the tedious process of separation of the ligature, with its attendant serious danger of bleeding, was avoided.

The Beginnings of the Antiseptic Treatment.

Undiluted carbolic acid is a powerful caustic; and although it might be employed in compound fracture, where some loss of tissue was of little moment in comparison with the tremendous danger to be averted, it was altogether unsuitable for wounds made by the surgeon. It soon appeared, however, that the acid would answer the purpose aimed at, though used in diluted forms devoid of caustic action, and therefore applicable to operative surgery. According to our then existing knowledge, two essential points had to be aimed at: to conduct the operation so that on its completion the wound should contain no living microbes, and to apply a dressing capable of preventing the access of other living organisms till the time should have arrived for changing it.

Carbolic acid lent itself well to both these objects. Our experience with this agent brought out what was, I believe, a new principle in pharmacology—namely, that the energy of action of any substance upon the human tissues depends not only upon the proportion in which it is contained in the material used as a vehicle for its administration, but also upon the degree of tenacity with which it is held by its solvent. Water dissolves carbolic acid sparingly and holds it extremely lightly, leaving it free to act energetically on other things for which it has greater affinity, while various organic substances absorb it greedily and hold it tenaciously. Hence its watery solution seemed admirably suited for a detergent lotion to be used during the operation for destroying any microbes that might fall upon the wound, and for purifying the surrounding skin and also the surgeon's hands and instruments. For the last-named purpose it had the further advantage that it did not act on steel.

For an external dressing the watery solution was not adapted, as it soon lost the acid it contained, and was irritating while it lasted. For this purpose some organic substances were found to answer well. Large proportions of the acid could be blended with them in so bland a form as to be unirritating; and such mixtures, while perpetually giving off enough of the volatile salt to prevent organic development in the discharges that flowed past them, served as a reliable store of the antiseptic for days together.

The appliances which I first used for carrying out the antiseptic principles were both rude and needlessly complicated. The years that have since passed have witnessed great improvements in both respects. Of the various materials which have been employed by myself and others, and their modes of application, I need say

nothing except to express my belief, as a matter of long experience, that carbolic acid, by virtue of its powerful affinity for the epidermis and oily matters associated with it, and also its great penetrating power, is still the best agent at our disposal for purifying the skin around the wound. But I must say a few words regarding a most important simplification of our procedure. Pasteur, as we have seen, had shown that the air of every inhabited room teems with microbes; and for a long time I employed various more or less elaborate precautions against the living atmospheric dust, not doubting that, as all wounds except the few which healed completely by the first intention underwent putrefactive fermentation, the blood must be a peculiarly favourable soil for the growth of putrefactive microbes. But I afterwards learnt that such was by no means the case. I had performed many experiments in confirmation of Pasteur's germ theory, not indeed in order to satisfy myself of its truth, but in the hope of convincing others. I had observed that uncontaminated milk, which would remain unaltered for an indefinite time if protected from dust, was made to teem with microbes of different kinds by a very brief exposure to the atmosphere, and that the same effect was produced by the addition of a drop of ordinary water. But when I came to experiment with blood drawn with antiseptic precautions into sterilised vessels, I saw to my surprise that it might remain free from microbes in spite of similar access of air or treatment with water. I even found that if very putrid blood was largely diluted with sterilised water, so as to diffuse its microbes widely and wash them of their acrid products, a drop of such dilution added to pure blood might leave it unchanged for days at the temperature of the body, although a trace of the septic liquid undiluted caused intense putrefaction within twenty-four hours. Hence I was led to conclude that it was the grosser forms of septic mischief rather than microbes in the attenuated condition in which they existed in the atmosphere, that we had to dread in surgical practice. And at the London Medical Congress in 1881 I hinted, when describing the experiments I have alluded to, that it might turn out possible to disregard altogether the atmospheric dust. But greatly as I should have rejoiced at such a simplification of our procedure, if justifiable, I did not then venture to test it in practice. I knew that with the safeguards which we then employed I could ensure the safety of my patients, and I did not dare to imperil it by relaxing them. There is one golden rule for all experiments upon our fellow-men. Let the thing tried be that which, according to our best judgment, is the most likely to promote the welfare of the patient; in other words, do as you would be done by.

Nine years later, however, at the Berlin Congress in 1890, I was able to bring forward what was, I believe, absolute demonstration of the harmlessness of the atmospheric dust in surgical operations. This conclusion has been justified by subsequent experience: the irritation of the wound by antiseptic irrigation and washing may therefore now be avoided, and nature left quite undisturbed to carry out her best methods of repair, while the surgeon may conduct his operations as simply as in former days, provided always that, deeply impressed with the tremendous importance of his object, and inspiring the same conviction in all his assistants, he vigilantly maintains from first to last, with a care that, once learnt, becomes instinctive, but for the want of which nothing else can compensate, the use of the simple means which will suffice to exclude from the wound the coarser forms of septic impurity.

Some Early Results of Antisepsis.

Even our earlier and ruder methods of carrying out the antiseptic principle soon produced a wonderful change in my surgical wards in the Glasgow Royal Infirmary, which, from being some of the most unhealthy in the kingdom, became, as I believe I may say without exaggeration, the healthiest in the world; while other wards, separated from mine only by a passage a few feet broad, where former modes of treatment were for a while continued, retained their former insalubrity. This result, I need hardly remark, was not in any degree due to special skill on my part, but simply to the strenuous endeavour to carry out strictly what seemed to me a principle of supreme importance.

Equally striking changes were afterwards witnessed in other institutions. Of these I may give one example. In the great Allgemeines Krankenhaus of Munich, hospital gangrene had become more and more rife from year to year, till at length the frightful condition was reached that 80 per cent. of all wounds became affected by it. It is only just to the memory of Professor von Nussbaum, then the head of that establishment, to say that he had done his utmost to check this frightful scourge; and that the evil was not caused by anything peculiar in his management was shown by the fact that in a private hospital under his care there was no unusual unhealthiness. The larger institution seemed to have become hopelessly infected, and the city authorities were contemplating its demolition and reconstruction. Under these circumstances, Professor von Nussbaum despatched his chief assistant, Dr. Lindpaintner, to Edinburgh, where I at that time occupied the chair of clinical surgery, to learn the details of the antiseptic system as we then practised it. He remained until he had entirely mastered them, and after his return all the cases were on a certain day dressed on our plan. From that day forward not a single case of hospital gangrene occurred in the Krankenhaus. The fearful disease pyæmia likewise disappeared, and erysipelas soon followed its example.

But it was by no means only in removing the unhealthiness of hospitals that the antiseptic system showed its benefits. Inflammation being suppressed, with attendant pain, fever, and wasting discharge, the sufferings of the patient, were, of course, immensely lessened; rapid primary union being now the rule, convalescence was correspondingly curtailed; while as regards safety and the essential nature of the mode of repair, it became a matter of indifference whether the wound had clean-cut surfaces which could be closely approximated, or whether the injury inflicted had been such as to cause destructiom of tissue. And operations which had been regarded from time immemorial as unjustifiable were adopted with complete safety.

It pleases me to think that there is an ever-increasing number of practitioners throughout the world to whom this will not appear the language of exaggeration. There are cases in which, from the situation of the part concerned or other unusual circumstances, it is impossible to carry out the antiseptic system completely. These, however, are quite exceptional; and even in them much has been done to mitigate the evil which cannot be altogether avoided.

I ask your indulgence if I have seemed to dwell too long upon matters in which I have been personally concerned. I now gladly return to the labours of others.

Nature of the Micro-organisms Concerned.

The striking results of the application of the germ theory to surgery acted as a powerful stimulus to the investigation of the nature of the micro-organisms concerned; and it soon appeared that putrefaction was by no means the only evil of microbic origin to which wounds were liable. I had myself very early noticed that hospital gangrene was not necessarily attended by any unpleasant odour; and I afterwards made a similar observation regarding the matter formed in a remarkable epidemic of erysipelas in Edinburgh obviously of infective character. I had also seen a careless dressing followed by the occurrence of suppuration without putrefaction. And as these non-putrefactive disorders had the same self-propagating property as ferments, and were suppressed by the same antiseptic agencies which were used for combating the putrefactive microbes, I did not doubt that they were of an analogous origin; and I ventured to express the view that, just as the various fermentations had each its special microbe, so it might be with the various complications of wounds. This surmise was afterwards amply verified. Professor Ogston, of Aberdeen, was an early worker in this field, and showed that in acute abscesses, that is to say those which run a rapid course, the matter, although often quite free from unpleasant odour, invariably contains micro-organisms belonging to the group which, from the spherical form of their elements, are termed micrococci; and these he classed as streptococci or staphylococci, according as they were arranged in chains or disposed in irregular clusters like bunches of grapes. The German pathologist, Fehleisen, followed with a beautiful research, by which he clearly proved that erysipelas is caused by a streptococcus. A host of earnest workers in different countries have cultivated the new science of bacteriology, and, while opening up a wide fresh domain of biology, have demonstrated in so many cases the casual relation between special micro-organisms and special diseases, not only in wounds but in the system generally, as to afford ample confirmation of the induction which had been made by Pasteur that all infective disorders are of microbic origin.

Not that we can look forward with anything like confidence to being able ever to see the *materies morbi* of every disease of this nature. One of the latest of such discoveries has been that by Pfeiffer of Berlin, of the bacillus of influenza, perhaps the most minute of all micro-organisms ever yet detected. The bacillus of anthrax, the cause of a plague common among cattle in some parts of Europe, and often communicated to sorters of foreign wool in

this country, is a giant as compared with this tiny being; and supposing the microbe of any infectious fever to be as much smaller than the influenza bacillus as this is less than that of anthrax, a by no means unlikely hypothesis, it is probable that it would never be visible to man. The improvements of the microscope, based on the principle established by my father in the earlier part of this century, have apparently nearly reached the limits of what is possible. But that such parasites are really the causes of all this great class of diseases can no longer be doubted.

(*To be continued.*)

REVIEWS AND NOTICES OF BOOKS.

FOODS: THEIR COMPOSITION AND ANALYSIS. By ALEXANDER WYNTER BLYTH, M.R.C.S., F.I.C., F.C.S., etc. Fourth edition, revised and enlarged. London: Charles Griffin and Co., Limited, Exeter Street, Strand. 1896.

The scope of this book is most comprehensive. It gives a history of adulteration as practised amongst the Greeks and Romans: the tricks of the bakers, brewers, vintners, pepperers, and spicers of our own country are then referred to, as well as those of France and Germany. The progress of British legislation on the adulteration of food has a chapter to itself, and the records show that when a duty had to be safeguarded diligence was displayed by those who were responsible for the duty, but the simple object of protecting the food of the people from adulteration was not considered of sufficient importance to use stringent measures for the enforcement of the Adulteration Act. In 1872 the first Adulteration Act was placed on the Statute book which provided that analysts should be appointed to examine samples and inspectors to purchase samples for analysis. The result of this combination has been that since 1872 more progress has been made in the detection and punishment of adulteration than in any previous period, food analysis has been systematically pursued with ability, zeal, and perseverance, and the work done has, on the whole, been of very good quality.

Mistakes have been made as a matter of course, and in these times when original discovery or priority of publication seems to be the rage of professional men, generalisations made on insufficient or incomplete data have been accepted and acted on, till shown to be wrong or imperfect by the more studious and less ambitious worker. In this way methods of analysis have been adopted which have proved inaccurate and imposed hardship or injustice on innocent persons, and as a case in point no mode of analysis has caused greater hardship than the coil method of milk analysis adopted by the public analysts. Brought into prominence at a time when skilled analysts were few, it was adopted officially, and to-day certificates containing the proportion of non-fatty solids are given from calculation, and not from direct estimation as they ought to be. The regulation paper coil used measures 52 square inches, and whatever is extracted by ether from this paper goes to increase the milk fat and to a corresponding degree diminish the non-fatty solids. In the case of milk on the border line of purity instances are on record that proceedings have been taken for water dilution, when the real transgressor has been the analyst's paper coil. The evidence found in the blue books of the Food Products Adulteration Commission will be considered and weighed by the legal profession, and the certificates containing calculated instead of actual results will fare badly before an intelligent bench of magistrates, as they have done already when such cases have been properly defended.

Food analysis commences in Part III., which is devoted to the carbo-hydrates. Milk, cream, butter, cheese, and lard are treated in Part IV.; tea, coffee, and cocoa in Part V.; alcohols, spirits, liqueurs, fermented liquors, and wine in part VI.; vinegar in Part VII.; condiments, as mustard, pepper, etc., in Part VIII.; and water in Part IX.

An inspection of the complete list of contents will show the author's diligence in collecting information on the subjects on which he treats, and every page of the book bears evidence of the zeal exercised in bringing together what has been published. The workers on food analysis in every available country are made to contribute to the store of knowledge accumulated in this volume, but it is one thing to bring together what has been written, and another to select only those portions which are of value on account of the accuracy of their information. Any author possessing an ambitious desire to treat on so many subjects must be pardoned for any slip he may make under such circumstances, because it is impossible in any one lifetime to go over the ground covered by the different workers placed under contribution. The accumulation of such a mass of undigested materials must, however, detract from the merits of the book, and it will be prudent for all readers to bear this in mind before they make the book a standard for reference in disputed cases.

To illustrate our meaning we may cite the method of detecting copper in peas, given on page 225: "A weighed quantity of the peas is made into a paste with water and a little hydric chloride, and the paste is placed in a proper platinum dish: a rod of zinc, on being inserted in the paste so as to touch the platinum dish, sets up a galvanic current, and at the end of several hours all the copper is deposited as a coherent film, and may be dried and weighed. A neater process is the connection of the platinum dish with the negative pole of a battery while the positive pole is suspended in the acid paste. In both instances the copper is deposited as copper." To anyone acquainted with the analysis of peas for copper this statement does no harm, but a novice might follow the method, with the result that his copper estimation would be too low, not being aware that the peas must be burnt to an ash before the whole of the copper can be estimated.

Again on page 381, Blondeau's experiments are quoted to show that in the ripening of cheese albuminoids are changed into fat, and though the contrary views of Muller and Siber are given, yet there is no condemnation of Blondeau's heresy, which we should expect from a cheese analyst. Perhaps, however, this tenderness of treatment may be due to the fact that in February, 1878, the author read a paper before the Society of Public Analysts,* in which he gave Blondeau's results, and added that a milk which yielded to him 2·09 per cent. of fat on December 20 was found by him to contain on January 23 following 3·919 per cent.; "therefore there can be no reasonable doubt that in this particular sample of milk in about a month the fat nearly doubled in amount."

Milk analysts are agreed as to the constancy of milk-fat since the great Manchester milk case, and it is satisfactory to observe that the note in the second edition on page 260, which states that 8·5 "solids not fat" is an untenable standard for milk, finds no place in the present edition. We, however, read in the evidence given before the Food Products Adulteration Commission on June 19, 1895, that Mr. Wynter Blyth said in reply to question 7815: "My own opinion is that 2·5 of fat and 8·5 of solids not fat would be a fair limit—a low limit, I confess."

When giving the composition of butter, on page 341, it is a mistake to take samples of butter obtained at Guildford, Winchester, and the Isle of Wight as representative ones, and the internal evidence derived from the analytical results given proves to demonstration that they are not typical of the commercial butters now on the market. There is such a rich assortment of modern determinations to hand that it sadly detracts from the

* *Analyst*, vol. iii., page 232.

merits of the book to be thrown back on results obtained twenty years ago, when butter analysis was in a state of transition, and butter was obtained from different sources than now.

Great praise is given, on page 393, to Stock's method of detecting beef stearin in lard. The author is probably not aware of the exposure of this method of analysis before the Food Products Adulteration Commission and the evidence given by Mr. Kilvert, a lard refiner, on the subject. He stated that in three out of four cases in which he was concerned in one year the analysts made mistakes, and that though successful in his defence, he had to pay in costs £425, but was allowed the sum of £15 only by the magistrates who tried the cases. The exposure has no doubt given the death blow to Stock's method, but it has been a long time dying, and while alive it worked irreparable mischief, and brought serious discredit on expert evidence.

In the analysis of pepper, Hassall's results are given, which carry us back forty years. In such a period trade fashions and public demands change, and, consequently, such data are of little use at the present time as showing the composition of commercial pepper.

There are many other points which might be noticed for praise or blame, but sufficient has been said to indicate what is good and what is bad in the book. The historical portions are satisfactory, and contain valuable information in a concise form. Much of the analytical work is a compilation of what has appeared in print in this and other countries, and whilst useful as a record of what has been done, the methods of analysis and results obtained have not been proved to be reliable, and proper judgment has not been exercised in eliminating methods of analysis which should not find a place in any book, much less ambitious than the one under review.

NEW IDEAS.

[*Inventors and manufacturers are invited to submit specimens of novelties, descriptive notices of which will be inserted for the information of readers of the Journal. Whenever possible, illustrative blocks adapted to the width of the Journal columns should accompany the particulars sent. Address: Editorial Department, 17, Bloomsbury Square, W.C.*]

SAPONACEOUS TOOTH PASTE.

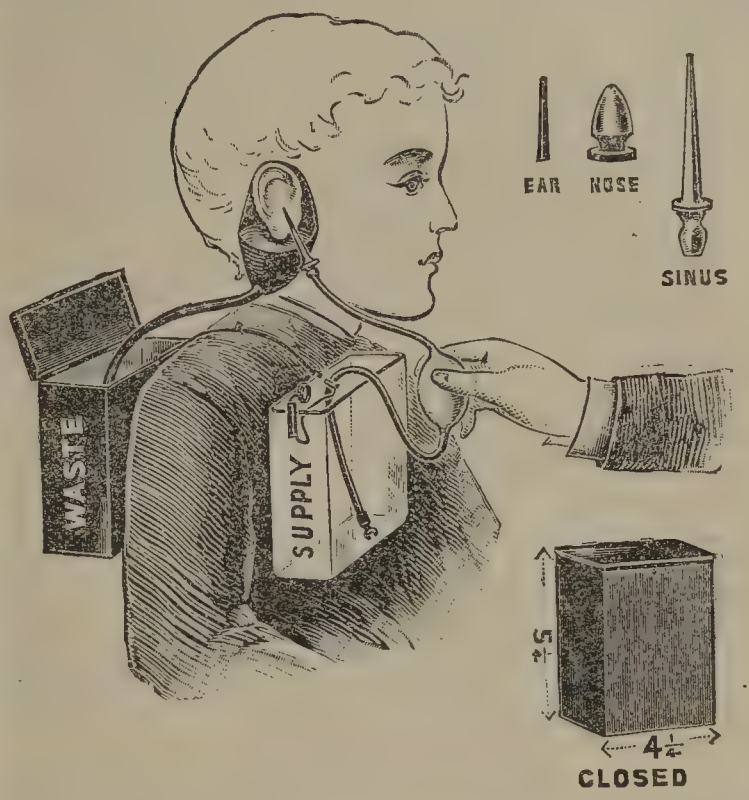
For those who like this sort of thing, this is doubtless just about the kind of thing they would like. Soap in the mouth is not to everyone's taste, however, though Mr. J. F. Brown's preparation might well please them if it were. Of satisfactory consistence and not too much perfumed, whilst convenient to handle in the neatly labelled collapsible tubes, it is probably as good as anything of its class. The Saponaceous Tooth Paste retails at sixpence, and is procurable at 1, Cannon Street, Dover.

KEYSTONE MEDICATED WINES.

Medicated wines are still to the fore, and Messrs. Stephen Smith and Co.'s preparations are naturally in the same position. Hall's Coca Wine, supplied by this firm, is a pleasant tonic with an attractive tea-like flavour. It has been very highly spoken of by medical men, professional singers, and public speakers, who find it supplies the nerve tone that is so often lacking in these days of over-pressure. Liebig's Extract of Meat and Malt Wine is another well-made preparation, prepared with the genuine Liebig Company's Extract of Meat, and is free from the sickly taste accompanying excess of malt extract. Indeed, this wine seems quite good enough to overcome the prejudice against such preparations that has been manifested of late by a few medical practitioners.

TWIN TANK EAR SYRINGE.

All who have had any practice in aural surgery will have felt the inadequacy of the old ear-syringing apparatus, which has remained unchanged for a great number of years. Feeling this Mr. J. J. Jackson, L.R.C.P., L.M., etc. (Edin.), East Ardsley, Yorks, suggested to Messrs. Reynolds and Branson, of Leeds, the idea of an improved instrument, which they have now brought out under the name of the "Twin Tank Ear Syringe." The advantages of this are:—



(*a*) That the waste must go into its receiver, and not down the patient's neck and clothes; (*b*) the operator has both hands at liberty, and (*c*) the patient can sit in an easy instead of a constrained position—in dealing with children this is most advantageous. The apparatus is most compact, and more portable than any in use heretofore, the whole fitting as it does into the metal tank.

OBITUARY.

Oxley.—On September 4, Herbert Lister Oxley, Chemist and Druggist, late of Palermo, Sicily. Aged 46.

Marsden.—On September 6, Thomas Bingley Marsden, Pharmaceutical Chemist, of Withington, Manchester. Aged 59. The deceased had been a Member of the Pharmaceutical Society since 1870.

Parkin.—On September 9, Joseph Brooks Parkin, Chemist and Druggist, of Ripon, Yorks. Aged 57. Mr. Parkin commenced business as a chemist at Ripon in 1867. In 1870 he entered the City Council, and held the office of Councillor for twelve consecutive years, on several occasions being elected at the head of the poll. In 1890 he was placed on the Commission of Peace for the city, and in 1892 was elected Mayor of Ripon and was at the same time made an Alderman. During his public career he took a prominent part in the North Road improvement, the gas and water schemes, etc. He also took a warm interest in the friendly societies of the city, and was connected with several lodges of Freemasons. His death occurred at Southport rather suddenly, the cause being heart failure. The present Mayor (Lord Ripon), on hearing of the sad event, signified his wish to attend the funeral, and to invite the members of the Council to accompany him.

Farrar.—On September 12, David Farrar, Chemist and Druggist, of Halifax. Aged 61. The deceased had been in business at Woolshops, Halifax, for about forty years, and retired a few years ago.

NOTICES.

All Articles, Letters, Notices, and Reports intended for publication in the Journal, Books for Review, and communications respecting Editorial matters generally must be Addressed "Editor, 17, Bloomsbury Square, London," and not in any case to individuals supposed to be connected with the Editorial Staff. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

ANY INSTRUCTIONS from Members, Associates, and Students of the Pharmaceutical Society, with reference to the transmission of the Journal, should be sent to the Secretary — Mr. Richard Bremridge,— 17, Bloomsbury Square, London.

BUSINESS communications—including advertisements, orders for copies of the JOURNAL, and instructions from Subscribers respecting transmission of same—must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London. Cheques and money orders should be made payable to "Street Brothers."

CORRESPONDENTS who wish notice to be taken of their communications must write in ink, on one side of the paper only, and should authenticate the matter sent with their names and addresses—of course not necessarily for publication. No notice can be taken of anonymous communications.

DRAWINGS for illustrations should be executed twice the desired size; clean, sharp lines being drawn with a pen and liquid Chinese ink. Shading by washes is inadmissible. Photographs can be utilised in certain cases.

ANSWERS TO QUERIES.

[*Queries addressed to the "Editorial Department, 17, Bloomsbury Square, W.C.," will be replied to in the Journal as early as possible after receipt, but the Editor cannot undertake to reply to them through the post, nor is it always possible to publish answers the same week. Questions on different subjects should be written on separate slips of paper, each of which should bear the sender's name or initials. Readers requiring working formulæ for special preparations, and intimating their wants to the Editor, will be assisted as far as may be practicable. The word "parts," when used in formulæ, invariably indicates parts by weight.*]

LABIATE PLANT.—The "special name" of the plant, by which we assume you mean the botanical name, is *Lycopus europæus.* [*Reply to* L. A. ROBERTS.]

SALE OF MORPHINE AND COCAINE.—With the knowledge you possess, the safer plan is to discontinue supplying the articles. [*Reply to* "MORPHIA."]

NAMES OF FERNS.—Yes! Nos. 1 and 2 are both specimens of lady fern. No. 3 is *Polystichum angulare.* Grassy bogs in subalpine districts should be searched for *Malaxis paludosa.* [*Reply to* "ASSOCIATE."]

INK FOR STYLOGRAPHIC PEN.—Extract of logwood, 3 ounces; sulphate of iron, 6 ounces; gum acacia, 5 ounces; water, 80 fluid ounces; boil together until dissolved; while hot add potass. bichromate, 4 drachms; nigrosine, 1 ounce; strain through muslin. [*Reply to* W. F.]

AUTHORSHIP OF PAPER.—Strange as it may appear, the paper was ascribed to the actual author. Moreover, the resemblance of the arguments employed to those advanced by the pseudo-political economist you name is more apparent than real. [*Reply to* F. GEORGE.]

SUBSCRIPTION.—After commencing business on your own account you are required to give notice to the Secretary that you desire to continue an Associate. If you do this in December next and enclose the subscription for 1897, you will be elected at the January meeting of Council. [*Reply to* "GOING INTO BUSINESS."]

LIABILITY OF LABELS.—The label marked No. 2 would certainly seem to render the preparation liable to medicine stamp duty. No. 1 would not, but by reducing the strength you risk provoking a conflict with the Board of Inland Revenue, unless you hold a wine licence. [*Reply to* J. M. D.]

FOREIGN JOURNALS.—Advertisements for pharmacists' assistants appear in the *Petit Moniteur de la Pharmacie* (6, rue Gôt-le-Cœur, Paris), *Annales de Pharmacie* (2, place des Bouchers, Louvain), and *Revue Pharmaceutique des Flandres* (2, rue Kluyskens, Gand). If you will say on what points you require information we will endeavour to assist you. [*Reply to* "YORKSHIRE."]

REGISTRATION OF FANCY NAME.—Apply to the Comptroller, Patent Office, 25, Southampton Buildings, Cursitor Street, Chancery Lane, London, E.C., for a copy of 'Instructions to Persons who wish to Register Trade-Marks.' If there is no opposition to your application the cost of registration need not exceed thirty shillings. [*Reply to* S. HUMPHREYS.]

BEEF AND MALT WINE.—This is not a very satisfactory preparation, either therapeutically (see recent comments in the medical papers) or pharmaceutically. You may prepare a palatable preparation from extract of beef, 1 oz.; liquid extract of malt, 4 ozs.; sherry, to 24 fluid ozs. Mix, let stand twelve hours, filter bright through powdered pumice-stone. It is well not to select too fruity a wine, as the malt extract makes it very sweet; if preferred, Catalan port may be substituted for the sherry. [*Reply to* R. H. R.]

DISPENSING DIFFICULTY.—In dispensing the prescription—

℞ Lin. Potass. Iodid. *c.* Sapone ..... ℥ss.
Ol. Terebinthinæ
Lin. Saponis ..... aa℥ij.

the cause of disturbance is the presence of turpentine. The separation that occurs is due to the disagreement of the oil and alcohol, whilst the liberation of iodine is probably caused by the action of oxidation products in the turpentine. We assume your potassium iodide is all right. [*Reply to* "I_2."]

COCA WINE.—This is best made by mixing the fluid extract with the wine, since coca leaves vary so greatly in alkaloidal strength that you will probably have a difficulty in producing a uniform article if you start with the leaves. If the wine contains too much alkaloid, a wine-glassful of it produces a very unpleasant sensation of numbness on the mucous membrane of the mouth and throat after swallowing it. In fact, a wine containing the amount of cocaine prescribed by the Excise (half a grain of alkaloid in 1 fluid ounce) is quite nauseous, from this reason. Some of the coca wines of trade only contain about 0·01 per cent. of cocaine. Probably the following will give you what you require:—Fluid extract of coca, 3 fluid ounces; Malaga wine, to 24 fluid ounces. Mix, let stand twelve hours, pour off, and filter bright through powdered pumice-stone. If you find this gives what you like, determine the amount of alkaloid in the fluid extract used, and in future use a preparation of the same alkaloidal strength. You will understand that you will require a wine licence to sell either this or the preceding wine. [*Reply to* R. H. R.]

PREVENTION OF BOILER INCRUSTATION.—To effect this it is necessary to use solutions of substances capable of precipitating salts contained in the water used. The non-adherent, muddy deposits thus caused can then be readily removed, from time to time, by blowing off steam or otherwise. It is difficult to suggest a solution that will answer in all cases, since the substances used should be selected in accordance with the nature of the water employed to fill the boiler. Catechu and other substances containing tannin are useful when the water is free from sulphates and chlorides, whilst starch, lime, baryta, soda and potash have also been employed with success. The *Era Formulary* gives the following formulæ:— (1) Boil together for half an hour, lime, 20 parts; resin, 10; soda, 50; and water, 200; then mix with this solution a strained decoction of catechu, 100 parts, in water, 100. Use one pint of the product every six weeks for each horse power, introducing into the boiler by means of a feed pump. (2) Use the following mixture every time the boiler is emptied:—Crystallised soda, 6 lb.; dextrin, 6 lb.; alum, 2 lb.; sugar, 2 lb.; potash, 1 lb. [*Reply to* "INQUIRER."]

PUBLICATION RECEIVED.

EXTRACTION OF THE TEETH. By J. F. COLYER, L.R.C.P., M.R.C.S., L.D.S. Pp. 102. Price 3*s.* 6*d.* London: Claudius Ash and Sons, Limited, Broad Street, Golden Square, W. 1896.

COMMUNICATIONS, LETTERS, ETC., have been received from Messrs. Bateson, Branson, Bullen, Farr, Ferguson, Forret, George, Hill, Hughes, Hulme, Humphreys, Kirkby, Knight, McDonald, Naylor, Oldfield, Reynolds, Rowell, Sawer, Schaer, Smith, Thomas, Watt, Woodward, Wyatt.

THE PROPERTIES AND USES OF FORMALDEHYDE.

BY F. C. J. BIRD.

The antiseptic and disinfectant properties of formaldehyde have been extensively investigated during the last two years, and the results obtained, both by bacteriologists and in the practice of various industries, have given it at once an important position amongst bactericidal agents. Formaldehyde is gaseous at ordinary temperatures, but is now obtainable commercially as a concentrated solution containing 40 per cent. of the aldehyde. Most of the published experiments have been made with this solution, which is placed on the market under various trade names.

Hoffman discovered formaldehyde in 1867. Loew subsequently demonstrated its germicidal powers, and Berlioz and Trillat suggested its use as a powerful disinfectant free from poisonous properties. It has the formula HCHO, is a powerful reducing agent, and when oxidised yields formic acid. A solid polymeric variety—paraformaldehyde—is also known. There are several chemical processes by which the aldehyde may be prepared, but the most practicable is that dependent on the limited oxidation of methylic alcohol. If a current of air charged with methylic alcohol vapour be passed over a coil of glowing platinum or platinised asbestos, and the escaping gases condensed in a Liebig's condenser a weak solution of formic aldehyde in methyl alcohol results. The substitution for the platinum spiral of a roll of superficially-oxidised copper gauze gently heated in a glass tube through which the mixed vapours are passed, the product being led into water, greatly increases the yield, it being possible by this means to obtain a solution containing 15 to 20 per cent. of formic aldehyde. The commercial solution "formalin" is understood to be manufactured by a similar process to the foregoing, probably with improved details by which a higher percentage strength in the product is ensured.

The 40 per cent. solution of formaldehyde as met with in commerce is a liquid of a pale sea-green tint, specific gravity about 1·070, acid reaction, and possessing a pungent and very characteristic odour. In more concentrated solutions the formaldehyde tends to pass into the polymeric and comparatively inactive form; this therefore is the strongest solution which will remain permanent. The acidity is due to formic and acetic acids, and the faint sea-green tint to a salt of copper, a distinct film of that metal being deposited on a bright steel knife-blade when immersed in the liquid for a short time. When exposed to the air, formaldehyde vapours gradually diffuse, and the solution loses strength.

With regard to the toxicity or otherwise of formaldehyde in solution, when taken internally, no record of exact experiments relating to its physiological action on the human subject appears to exist, and information such as we possess concerning salicylic acid, carbolic acid, mercuric chloride, etc., is wanting. The solid polymer may be given in doses up to 90 grains as an intestinal antiseptic, its action depending on small quantities of formaldehyde that are continuously liberated; and this is put forward as one proof of the harmless nature of the antiseptic. Dr. Rideal is said to have taken a considerable quantity of a 1 per cent. solution without experiencing any ill effects.

Formaldehyde ranks high as a deodorant. Either as vapour or in solution it almost instantly removes the putrid odour of decomposing animal or vegetable matter, combining with sulphuretted hydrogen, mercaptan, ammonia and ammonia bases generally to form inodorous compounds. With ammonia it gives hexamethyleneamine. Putrid meat, broth, urine, fæces, etc., are immediately deodorised when treated with a little of the 40 per cent. solution.

The vapours given off by the solution are extremely irritating to the eyes and the mucous membrane of the nose and throat, so that care should be taken when handling the solution not to spill any on the hands or skin, as it is found to have a similar effect to strong carbolic acid. No pain is felt at the moment, but afterwards the skin becomes quite insensitive, and very rough and white wherever the liquid has been in contact with it.

Gelatin exposed to formaldehyde vapour becomes insoluble even in hot water, and animal tissues generally are hardened in a remarkable manner. This property is turned to account in the rapid hardening of tissues for microscopical examination, and in photography; Dr. C. L. Schleich has also prepared from the formalised gelatin an antiseptic dusting powder for wounds. Dr. Schleich dissolves gelatin in water, adds 25 minims of "formalin" to the pound of gelatin, and dries and powders the product. This powder, in contact with healthy or inflamed tissue, disengages formaldehyde vapour, thus maintaining an antiseptic atmosphere around the wound. Necrotic tissue or masses of dried secretion may prevent contact between the powder and the wound, in which case recourse is had to a weak hydrochloric solution of pepsin, which liberates formaldehyde from the powder equally as well as the living tissue.

As a hardening agent in microscopy, and for the preservation of vegetable structures, formaldehyde solution promises to be of the greatest service. Mr. E. M. Holmes, F.L.S., read an interesting paper on this subject some months since, and his experience confirms the statements that have been made as to the advantages of formaldehyde over such solutions as chromic acid and mercuric chloride, or even absolute alcohol. Dr. Eccles, writing to the *British Medical Journal*, has stated that, whilst the last-named reagents required a period of time ranging from four or five to fourteen days, and the tissues either became brittle and unequally hardened or the staining was interfered with, those sections treated with formaldehyde were sufficiently hardened in three days, did not become brittle and stained well, the cells retaining their original shape.

The following table gives the purposes for which formaldehyde has been employed, and the proportions recommended. 2½ parts of the 40 per cent. solution may replace each part of formaldehyde :—

A solution of Formaldehyde containing.	Effects produced.
1 part in 125,000 parts	Kills anthrax bacilli.
,, 50,000 ,, ...	Prevents the development of typhus bacilli, etc.
,, 32,000 ,, ...	Preserves milk for several days.
,, 25,000 ,, ...	Forms a useful injection in leucorrhœa, etc.
,, 20,000 ,, ...	Preserves wines, weak alcoholic liquids, and beer, also milk for several weeks.
,, 4,000 ,, ...	Recommended for moistening paper used to cover jam, etc.
,, 3,200 ,, ...	For rinsing dairy vessels, etc.
,, 2,500 ,, ...	Destroys the most resistant micro-organism in one hour.
,, 2,000 ,, ...	For rinsing casks and vessels intended for liquids liable to fermentation.
,, 500 ,, ...	For the irrigation of catheters, etc., and as a mouth-wash.
,, 250 to 200 ,, ...	A general disinfectant solution for washing hands, instruments, etc., in surgery, spraying in sick rooms, and as a deodorant.
,, 150 to 100 ,, ...	For hardening microscopic tissues, which should be immersed for a considerable time to give the best results.
,, 100 ,, ...	In lupus, psoriasis, and skin diseases.
,, 50 to 25 ,, ...	Sterilises surgical catgut, silk, etc., by steeping.
,, 25 ,, ...	For quickly hardening and preserving for microscopical sections; longer immersion in a weaker solution gives better results.
,, 10 ,, }	For hardening very firm tissues } In pathological
,, 5 ,, }	,, firm tissues } and histological
,, 2½ ,, }	,, soft ,, } work.

The practice of employing formaldehyde as a preservative for milk has of late become very general amongst dairymen, with the result that much attention has been directed to methods for its detection. As will be seen from the above table, the proportion

necessary is so small that any test to be of service must be exceptionally delicate, and although the qualitative reactions in use do not generally fail in this respect, most of them possess the disadvantage of being common to aldehydes generally. The more important are the following:—Ammonio-nitrate of silver, Schiff's reagent, diphenylamine, Hehner's casein-sulphuric test, the phenol-sulphuric test, the chromate test, the micro. test with ammonia, and Nessler's reagent.

QUALITATIVE TESTS FOR FORMALDEHYDE.

Ammonio nitrate of silver.—This reaction is moderately delicate, but is given by other aldehydes. It will not detect the faint traces which are readily recognisable by Hehner's casein-sulphuric acid, and the phenol-sulphuric test. The distillate from many organic liquids gives a slight browning with this reagent which detracts from its usefulness.

Schiff's reagent (rosaniline, sodium sulphite, and hydrochloric acid) is colourless, but with aldehydes gives a reddish violet colour. Richmond and Boseley point out that the solution should always contain excess of acid, as alkalis turn it pink, and free acid does not interfere with the violet tint due to aldehyde. According to Hehner the best way of operating is as follows:—Distil 25 C.c. from the liquid under examination, place in a stoppered cylinder, and next morning add a few drops of sulphurous acid. The rose colour due to oxidation disappears whilst the violet tint due to aldehyde remains. This test is only useful for confirmation, as it reacts with other aldehydes.

The diphenylamine test (Richmond and Boseley).—Distil the liquid, such as milk, etc., into an aqueous solution of diphenylamine, in the preparation of which just sufficient sulphuric acid has been used to effect solution. If formaldehyde be present a white flocculent precipitate is deposited, which often has a green tinge. This test is inferior to Hehner's and Schiff's, and is not very delicate.

Hehner's casein-sulphuric test.—Add one drop of milk to the sample and pour the mixture carefully on the surface of strong sulphuric acid contained in a test-tube. A blue ring appears at the zone of contact, when a trace of formaldehyde is present, but the reaction is not obtained with ordinary aldehyde, nor does much formaldehyde give it. Care being taken that the solution is very dilute, this appears to be a thoroughly distinctive test; it is very sensitive, and will detect 1 part of formaldehyde in 200,000. The production of the blue colour probably depends on the presence of casein in the milk. In testing milk for formaldehyde, distillation may be avoided by diluting the milk with an equal volume of water and carefully adding sulphuric acid of 90 to 94 per cent. strength. In the absence of formaldehyde a faint greenish tinge appears at the junction of the two liquids, but if present a violet ring is developed.

The phenol sulphuric test is described by O. Hehner* as being equally as sensitive and characteristic as the foregoing, with the further recommendation of answering with all proportions of formaldehyde. To the distillate from the sample of milk, or other liquid under examination, add one drop of a dilute aqueous solution of phenol, and pour the mixture on the surface of strong sulphuric acid contained in a test tube. A bright crimson colour appears at the line of contact. This detects 1 in 200,000, and if more than 1 in 100,000 be present there is seen above the red ring a white, milky zone, and, in stronger solution, a white or pinkish precipitate. It is important that only a trace of phenol be used (I find ½-grain to the ounce a suitable strength for the solution), and that the test be carried out exactly as described.

* *Analyst*, April, 1896.

A dilute solution of phenol, without formaldehyde, poured on strong sulphuric acid gives a coloured zone, crimson above and green below, therefore excess must be avoided. The coloured ring due to formaldehyde is crimson below, merging into yellow above. Acetaldehyde gives an orange precipitate, not a crimson colour. Other benzene hydroxy-derivatives may be used in place of phenol, as salicylic acid, resorcinol, and pyrogallol; they all yield the red colour.

The chromate test.—(C. D. Mitchell) 1 C.c. nitric acid with 1 C.c. of a solution of bichromate of potash, forms a reagent which, added to the distillate from a liquid containing formaldehyde, produces an intense violet coloration. This does not appear to be a very delicate test, as I have not been able to obtain the reaction with traces of formaldehyde.

Nessler's reagent gives a distinct yellow precipitate with a solution containing one part of formaldehyde in 200,000. It therefore lacks nothing in delicacy, and as the reagent is always to be found on the shelves of the pharmacy it may be recommended as the most convenient test. With solutions of 1 part of formaldehyde in 50,000 to 100,000 a yellowish opalescence first appears, quickly changing into a copious orange precipitate, which on standing or gently heating becomes darkened in colour and reduced. From 1 in 100,000 to 1 in 200,000 the opalescence develops into a lemon-yellow precipitate on standing, and little or no reduction takes place. The effect produced by formaldehyde is quite distinct from that of a weak solution of ammonia giving about the same depth of colour. The latter remains quite clear and transparent even on boiling. With strong solutions of acetaldehyde an orange precipitate and immediate reduction occurs, the same as with formaldehyde, but traces hardly affect Nessler's reagent, and when acetaldehyde is present in sufficient quantity to even communicate its odour to the liquid a yellow precipitate is the only result. The reaction of acetaldehyde with Nessler is very much less energetic than that of formaldehyde, and there is little risk of confounding the two aldehydes, when traces only are present, such as would be met with in the ordinary course of analysis.

The ammonia micro. test (Remijn).—The substance or liquid suspected to contain formaldehyde is distilled with water, a drop of the distillate evaporated on a slide with a drop of ammonia, and the crystalline residue tested with mercuric chloride in excess. Crystals are immediately formed, hexahedral at first, but becoming octahedral after a time. The crystals are easily obtained from a 1 in 10,000 solution, and are visible in a 1 in 100,000 solution. The evaporated residue also gives precipitates with platinic chloride, phosphomolybdic acid, and other alkaloidal reagents.

THE QUANTITATIVE DETERMINATION OF FORMALDEHYDE.

There are several methods by which formaldehyde may be quantitatively determined. (1) The solution may be directly titrated with standard solution of ammonia, rosolic acid being used to indicate the complete conversion of the formaldehyde into hexamethylene-amine. (2) Excess of standard ammonia having been added, the solution may be titrated back again with standard acid. (3) The solution may be evaporated to dryness with excess of standard ammonia and the hexamethylene-amine weighed, the formaldehyde being calculated from the following equation:—

$$6CH_2O + 4NH_3 = (CH_2)_6N_4 + 6H_2O.$$

(4) The solution containing formaldehyde may be heated for several days in a closed vessel on a water bath with excess of sodium hydrate; sodium formate, and methyl alcohol are produced, and the excess of sodium hydrate is determined by titration with acid (Allen).

(5) The insolubility of the precipitate formed by sulphuric acid, phenol, and formaldehyde in the phenol-sulphuric test has led

O. Hehner to suggest its utilisation for the determination of formaldehyde in dilute solutions. It must be borne in mind that the whole of the formaldehyde cannot be separated by distillation, even when three-fourths of the volume of the liquid containing it has been collected as distillate, the first four of the foregoing methods therefore, if accurate results be desired, are only applicable to solutions in which no other interfering constituent exists. Some other way of removing the formaldehyde is apparently necessary for its exact quantitative determination in complex mixtures.

ECONOMIC APPLICATIONS OF FORMALDEHYDE.

Formaldehyde, as shown by Slater and Rideal, when employed of such a strength in weak alcoholic liquids as to be fatal to lactic and butyric acid organisms and other bacteria which produce injurious secondary fermentation, does not interfere with the growth of the yeast plant, nor does it hinder in any way the formation of alcohol. This fact has been turned to account in the brewing industry for producing pure cultivations of yeast, and preventing souring, cloudiness, or ropiness in the finished product; it should also prove equally useful in ensuring soundness in such fermented liquids as orange and ginger wines, perry, cider, etc. The proportion necessary is from 1 in 10,000 to 1 in 20,000.

This illustrates a striking peculiarity in the antiseptic action of formaldehyde, for whilst it exerts an intensely powerful inhibitory effect on bacteria generally, especially those of putrefaction, in contrast it has but a comparatively feeble influence in preventing the development of the lower forms of plant life. Hence, vegetable solutions preserved by its aid, although retaining their colour and other physical characters to a remarkable degree, are exceedingly prone to develop mouldy growths, etc., and if this is to be avoided, the proportion of antiseptic must be increased to an extent far greater than required to simply arrest putrefactive change.

Meat, fish, etc., may be kept for several days during the hottest weather by placing it in a well-covered dish with a tuft of cotton-wool moistened with from 4 to 8 drops of solution of formaldehyde. The antiseptic vapour does not communicate the slightest odour or taste to the meat, etc., and after considerable experience of this method I have never found it fail to maintain the articles absolutely untainted for four or five days, even under the severest conditions of temperature.

Disinfection by formaldehyde vapour generated directly from methylic alcohol has lately attracted considerable attention. The simplest form of apparatus for the purpose consists of an ordinary spirit lamp provided with a coil or spiral of platinum extending about 1 inch above the wick. After lighting the lamp and allowing the platinum to become red hot, the flame is extinguished. The platinum continues to glow in contact with the air and methylic alcohol vapour, and the latter rising from the wick becomes partially converted into formaldehyde, the action being maintained as long as any methyl alcohol remains in the reservoir. In this apparatus a large proportion of the alcohol escapes oxidation and, in consequence, several improved forms have been devised. In one, resembling a plumber's blow-lamp, a stream of methylic alcohol vapour is directed upon incandescent platinum; there are also air holes, which can be so adjusted as to regulate the proportions of air and alcohol vapour; in this lamp the greater part of the alcohol is converted. Formaldehyde vapour may also be generated in an apartment by spraying the solution into the atmosphere or heating it in an evaporating dish. Diffusion, however, is slow, in the latter case, as has already been stated, and it is much better to allow the solution to fall drop by drop on a heated plate of metal. A handy arrangement for effecting this consists of a tinplate tray supported on the ring of a retort stand, and heated by a spirit lamp, the formaldehyde solution being contained in a glass separator held in an upper ring of the stand and, by regulation of the stopcock, allowed to drop slowly on to the heated tray beneath. Careful experiment has shown that disinfection with formaldehyde vapour is most thorough and effective, the vapour diffusing very rapidly and penetrating everywhere, dust on the walls, in the air, and even in cupboards being almost immediately sterilised. Owing to the irritating nature of the formaldehyde fumes on the mucous membrane and air passages it is imperative that, after disinfection by this means, currents of air should be allowed to pass through the apartment for a quarter of an hour before entering it, whilst complete removal of the disinfectant should be ensured by free ventilation for at least two days.

THE ASSAY OF HYDROGEN PEROXIDE.

BY J. F. BROWN, DOVER.

Although the stability of hydrogen peroxide has been pronounced by Wolffenstein (*Pharm. Journ.* [3], vol. xxv., p. 542) to be much greater than is commonly supposed, the fact remains that commercial specimens, even if carefully kept, are apt to become very deficient in available oxygen. An instance of this occurring with my own stock led me to try the process for its assay proposed by Moerck (*Pharm. Journ.* [3], vol. xxiii., p. 806). Two successive testings of a freshly-opened bottle of nominal 20-volume strength gave 19·3 and 19·4 volumes respectively. The process is so simple and easily worked that I venture to think it might be generally acceptable, if reduced to its simplest expression, on the lines of Mr. Proctor's admirable 'Manual of Pharmaceutical Testing.'

To render it available to those who may not have at command metric weights and measures, I selected as the unit of volume 20 minims of distilled water—which serves for the test solution, for the liquid to be tested, and for the volume of oxygen found. The basis from which I started was Moerck's statement that a solution of potassium permanganate containing 0·2625 per cent. of that salt will liberate from hydrogen peroxide, under appropriate conditions, half its own volume of oxygen. A suitable quantity for extemporaneous testing would be that sufficient to set free twenty times its volume of oxygen from 5 units, or 100 minims of the sample to be tested. This will be $2 \times 20 \times 5 = 200$ units.

200 units = 4000 minims = ℥viii., ℥ii., M. xl.

And the weight of permanganate required for 4000 minims is, making the correction necessary to convert fluid minims into solid grains,

$40 \times {\cdot}2625 = 10{\cdot}5 \times 437{\cdot}5 \div 480 = 9{\cdot}57$ grains.

Therefore, dissolve ten grains of potassium permanganate in the above quantity of distilled water. The inaccuracy involved in this is less than it appears, since in working with a standardised solution it is necessary to add a few drops of solution of permanganate to the liquid to be tested, in order to overcome any reducing action exerted by the water. To a pint of water contained in a 32 oz. or 40 oz. clear white glass bottle, add 100 minims of dilute sulphuric acid, rinse the measure, and then add exactly 100 minims of the hydrogen peroxide. Unless the precaution of rinsing the measure be taken, evolution of gas begins in it, and a trifling error results. Now pour in cautiously the permanganate solution, with frequent agitation, until a permanent pink colour is produced. Measure the residue of the solution to ascertain the quantity used, which, expressed in units—of 20 minims—and divided by ten, will give the strength in volumes of the sample tested. For example, in the second testing noted above, the amount of solution remaining was just ℥ii. fl. or six units, hence the quantity used was $200 - 6 = 194$ and $194 \div 10 = 19{\cdot}4$ vols.

BOTANIC GARDENS OF THE WORLD.

I.—LONDON PRIVATE PHYSIC GARDENS.

(*Continued from page* 159.)

In Gerard's time Holborn was still a village, taking its name from the Oldborne, a tributary of the Fleet. All the way from St. Andrew's Church to Chancery Lane there stretched a series of gardens and pasture lands. In this region, redolent with country scents, was situated Gerard's physic garden. It lay on the slope of the hill between the present Ely Place and what was formerly the Fleet River. On every side were woods, fields, and hedgerows, "fields from the Charter House to Clerkenwell, with Finsbury and Moorfields stretching beyond the marsh by Aldersgate to the woods which lost themselves in Epping Forest. Over London Bridge from Southwark to Lambeth Palace, Lambeth marshes without a habitation." Gerard could gather then from Gray's Inn Lane mallow and shepherd's purse, sweet woodruff, bugle, and Paul's betony, and almost everywhere on the roofs grew the yellow wallflower and golden stonecrop. From the meadows near Gray's Inn he obtained the red-flowered clary, white saxifrage, the sad-coloured rocket, yarrow, lesser hawkweed, and the curious strawberry-headed trefoil. It is no wonder that Gerard's catalogue of his garden, published in 1596, contains no less than one thousand and thirty-three species of plants. So much larger, however, was this number than was usual in physic gardens that Gerard thought it wise to get De l'Obel to attest the fact that he had actually seen them growing in his garden. Only one copy of this *Catalogue* is now in existence. It originally belonged to Sir Hans Sloane, and is carefully preserved in the British Museum. From the fact of its being but carelessly printed and its extreme rarity, Daydon Jackson, the learned editor of Gerard, conjectures that it was originally printed for private distribution among Gerard's personal friends. A second edition was published in 1599, and may still be met with from time to time, though the best edition for the student is the modern one of Daydon Jackson, presenting as it does both editions of the catalogue line for line and letter for letter, together with references to the *Herbal* and a life of Gerard.

John Parkinson, 1567-1640, apothecary to King James I., like Gerard, had a garden well stored with rarities, of which he made free use in the composition of his "speaking garden," the *Paradisus in Sole*, or *Paradisus Terrestris*, of 1629, and his *Theatrum Botanicum*, or *Theater of Plants*, of 1640. Parkinson's 'Earthly Paradise' is the first English work in which garden flowers are separately described and figured. It is "a garden of all sorts of flowers which our English ayre will permit to be nursed up, with a kitchen garden of all manner of herbs, roots, and fruits for meat or sawce, used with us, and an orchard of all sorte of fruit-bearing trees and shrubbes fit for our land, together with the right ordering, planting, and preserving of them, and their uses and vertues.' Nearly a thousand plants are described in this work. At this time the chief foreign productions of English gardens were European exotics, some Asiatic exotics, and a few from the northern coasts of Africa. Parkinson mentions 120 varieties of the tulip, sixty anemones, more than ninety of the narcissus tribe, fifty carnations, twenty pinks, fifty hyacinths, thirty crocuses, and about forty of the iris genus. In the orchard of the time there grew sixty kinds of plums, as many apples and pears, thirty cherries, and more than twenty peaches. From Dr. Boel, a native of the Low Countries, but resident in Lisbon at the time of the publication of the *Theater of Plants*, Parkinson received many seeds of plants hitherto unknown in England, and he was much indebted to the notes of De l'Obel, an assistance expressly acknowledged by him. In indigenous botany he speaks of John Gordier as "a great lover and curious searcher of plants, who, besides this (*Geranium lucidum*), hath found in his country other plants not imagined to grow in our land," and commends Mrs. Thomazin Tunstall for her discovery of several new species in the neighbourhood of Ingleborough Hill, in Lancashire. She is recorded to have cultivated a garden well stored with exotics. The classification pursued by Parkinson in his *Theater of Plants*, and presumably in his garden, must be regarded as very empirical, embracing as it does, for example, *Plantæ odoratæ*, sweet smelling plants; *Catharticæ*, purging plants; *Venenatæ*, *Narcoticæ*, *Nocivæ* et *Alexi-pharmicæ*, venomous, sleepy, hurtful plants and their counter poisons; *Saxifragæ*, break-stone plants; *Vulnerariæ*, wound herbs; *Refrigerantes et Intubaceæ*, cooling and succory-like herbs *Calidæ et Acres*, hot and sharp-biting plants; *Umbelliferæ*, umbelliferous plants; *Cardui et Spinosæ*, thistle and thorny plants; *Filices et Herbæ capillares*, ferns and capillary plants; *Legumina*, pulses; *Cerealia*, corn; *Gramina*, *Junci*, *Arundines*, grasses, rushes, and reeds; *Paludosæ*, *Aquaticæ*, *Marinæ*, *Musci et Fungi*, marsh, water, and sea plants, mosses and mushrooms; *Miscellaneæ*, the unordered tribe; *Arbores et Frutices*, trees and shrubbes; *Exoticæ and Peregrinæ*, outlandish plants. "As yet no line had been drawn with sufficient accuracy between species and variety, between nature and the effect of culture, or of soil and situation, nor was this brought about till the essential parts of plants, the flower, and the fruit became objects of classification, instead of the vague distinctions hitherto observed. Parkinson, for example, like Gerard, ranks the sea cabbage, *Brassica orientalis*, a cruciferous plant, with the thorow wax, *Bupleurum*, an umbelliferous plant, simply because they both have perfoliate leaves."

Another famous London physic garden was that of John Tradescant, at Lambeth, whose marshes formed a happy hunting ground for the herbalist. "Abundance of water violets grew by Thames side near to Lambeth, every little point and bend of the river was fringed with willow herb, lysimachia and purple loose-strife, while ladies' mantle grew plentifully by the mere-stones by Lambeth, which divide the liberties of London from Surrey." Tradescant is described by Parkinson as being "a painful, industrious searcher and lover of all nature's varieties," who "wonderfully laboured to obtain all the rarest fruits in any place of christendom—Turkey, yea, or the whole world." By birth a Dutchman, he entered the service of Salisbury, the Lord Treasurer, and Lord Wooton, for whom he travelled, collecting plants as far eastward as Russia. He was in a fleet despatched against Algiers in 1620, and brought home plants from Barbary. About the year 1629 he obtained the title of Gardener to Charles I. and in 1656 published a catalogue of the natural curiosities preserved by him in his Museum or "Ark." At the end of this duodecimo is a list of the plants grown in his garden, giving both their English and Latin names. He sent his son to Virginia, from which colony he returned with many curious plants, and Tradescant's spiderwort and aster are still known to florists. "The name Tradescantia was first applied by Ruppius in his *Flora Jenensis* to a plant introduced into the English gardens by Tradescant himself—Tradescant's Spiderwort, to which Linnæus added six other species." In 1749 Sir William Watson visited this old garden at Lambeth, and made a communication regarding it to the Royal Society, in which he says that though neglected for many years and was overgrown with weeds, there were still traces of its founder to be seen there. "We found there," he says, "the *Borrago latifolia sempervirens*, of C.B.; *Polygonatum vulgare latifolium*, C.B.; *Aristolochia clematis recta*, C.B.; and *Dracontium*. There were still standing in this garden two trees of *Arbutus* which successfully withstood the excepionally severe winters of 1729 and

1740, which proved fatal to many exotics in England. In the orchard there was a tree of *Rhamnus cathartious*, about twenty feet in height and nearly a foot in girth." Tradescant's collection of curiosities passed to the Asmolean Museum at Oxford.

Dr. Compton, Bishop of London, had also a famous physic garden at Fulham during his tenancy of that see, 1675-1713, which he placed freely at the disposal of the botanists of the time. Many of the figures in Plukenet's *Phytographia* and *Almagestum Botanicum* were drawn directly from specimens in this garden, and Ray, in his *History of Plants* catalogues several new species of trees and plants from North America and elsewhere acclimatised there. Petiver, too, availed himself of the greenhouse rarities, and the hardy exotic trees and shrubs which formed the glory of the Bishop's collection. After Dr. Compton's death, the garden was neglected, and presented a sorry appearance when visited by Sir William Watson in 1741. Many of the most valuable exotic trees had been removed to make way for ordinary kitchen plants, but there still remained cedars of Lebanon, cork trees, pistachio trees, and honey locusts, which were probably the largest of their kind in Europe.

Another botanical garden of whose rarities Ray and his friends made use was that of Richard Warner, of Woodford, where, in the year 1758 the Cape jasmine, *Gardenia florida*, flowered for the first time in England. Warner was the author of *Plantæ Woodfordienses: a Catalogue of the More Perfect Plants Growing Spontaneously about Woodford*, published in 1771, a little book embodying the yearly herborisations of the Company of Apothecaries in his neighbourhood.

As late as the year 1828 there still existed a private physic garden at Chelsea, kept by Howard, a servant of Sloane, of which Mitford, in a manuscript preserved by Faulkner, gives the following account:—"The Garden of the Clock House.—This ground formed part of the ancient gardens of the mansion of Sir Thomas More. Subsequently it belonged to Beaufort House, and has probably remained under cultivation ever since. It can be traced afterwards into the possession of Sir Hans Sloane, from whom it came into the hands of the family [Howard] that now hold it by lease."

"This is one of the oldest gardens in the vicinity of London, and is cultivated now as it was half a century since. The walls are covered with ancient fig trees and fine old vines of the choicest sort. Vines also are grown on treillages near the walks. This is a mode of culture now passed away, and bespeaks a reliance on summers more warm and genial than those of the present time. There are four large standard pomegranates, some of which are in full flower at the present time; these fine and beautiful plants in modern gardens have always the warmth and protection of a wall, but they were formerly grown like the present specimens, in the open border. A remarkable shrub that adorns the venerable garden is a large *Camellia japonica* growing in the open grounds, without even the protection of a wall. It is of the single red species, apparently uninjured by the severity of our winter, and may be considered, at least in this part of England, as a remarkable curiosity. Near the entrance is a most beautiful specimen of the *Gleditsia triancanthos* of unusual size, at least, I have never seen it equalled but by two trees of the same species that are in the gardens of Lord Tankerville at Walton Bridge. Miss Howard's garden possesses a fine plant of the *Althœa frutex*, the arbutus and myrtle. These exotic shrubs flourish more in perfect health and beauty. A *Calycanthus floridus*, still in full vigour, is known to have been here more than sixty years; but the oldest tree in the garden is the mulberry, now decaying fast, and which, probably, must have seen more than two centuries."

"The profits attending the cultivation of this small and curious garden are chiefly drawn from the sale of fruit, and the distillation of waters, which used to be considered as possessing great medicinal powers. They formerly were as much esteemed and as freely sold as the drugs of the apothecary. The venerable old lady who resides at the Clock House, and whose lease of the ground and of her life is alike drawing to a close, remembers the old-fashioned families in the country coming with their coaches-and-four in the autumn of every year to lay in their annual stock of spearmint, pennyroyal, peppermint, and other waters good for gravel, stone, and of great efficacy in inward bruises; and even at this day an advertisement in the window reminds the public of the great and specific virtues of these bottles, whose general fame has long since expired. In a few years no remains of these singular premises will be seen. The time-eaten walls, the wooden clock,* the ancient trees, the curious house, the venerable mistress, and the old man equally venerable, who for more than eighty years has stood the magician of the large distilling vat, these will all be gone and even the memory of them no longer preserved but for these few hasty lines."

"This was the kind of garden old Tradescant cultivated, which Compton loved, and which Evelyn described, which was once numerous in the neighbourhood of London—at Lambeth, at Fulham, and particularly at Chelsea—and of which this at the Clock House may perhaps be considered as the latest specimen."

WEIGHTS AND MEASURES.

(*Concluded from page* 255.)

To obtain the advantages referred to last week it would be necessary to re-arrange the whole of our "systems" of weights, measures, and coinage, which are not decimal, while our arithmetic is. As we cannot change our arithmetic—and, moreover, no conceivable arithmetic would fit our weights, measures, and coinage, there being almost as many radices as there are denominations—it seems the only proper course is to decimalise it in some way, and by preference to adopt the metric system entire. This would involve no greater change than the adoption of any other decimal system with a different base, and we should have the advantage, which is not inconsiderable, although perhaps it has been over-rated, of having the same system as the greater part of the rest of Europe. Even if we did not we should have greatly simplified the transition, because the use of a single factor applied to a simple number would at once translate any weight or measure of our own decimal system into its equivalent in the metric system.

While the importance of a decimal coinage is quite as great as is that of decimal weights and measures, the choice of the standard is affected by somewhat different considerations. There is no such direct connection between money on the one side and weights and measures on the other, as between weights and measures themselves. There is no need for a common basis, and in fact, there is no such basis either in this or any other country. Nor is there any such general consensus of usage of any coin as there is of the metre as a standard. In France the franc was adopted as the standard money of account, and it was decimally subdivided; in Germany until recently the thaler was the unit of account, and it was neither decimally divided nor uniform throughout Germany. When recently this coinage was revised a new unit of account was adopted, viz., the mark, which was one-third of the principal thaler, and it was divided decimally, the new unit being nearer in value to our shilling than to any other coin of account. To adopt, therefore, any one of

* From this clock over the door of the house attached to it the garden took its name.

the units of account now in use in other countries would give us less convenience than would the adoption of the metre as a basis for weights and measures, would, in fact, only associate us with that one country, leaving us still differing from all others. It is thought by many, too, that the franc, or the mark, or the florin, would be rather too small a unit of account for us who are so accustomed to the pound, and that this unit of ours is the basis of transactions of such enormous magnitude, both in this and other countries, that it would be a mistake to change it, and would cause to others, as well as to ourselves, more confusion and inconvenience than would be gained by assimilating our currency with that of, say, Germany or France. What we do need is to arrange our coins decimally, whether we adopt the shilling or the florin, or, as would be most likely, the pound as the unit of account. A good deal has been said about the persistence of old terms, that a Frenchman still speaks of a sou, and perhaps a German sometimes of a thaler, and this is said to be a proof that the modern systems are not really in general use. But it must be remembered that the Frenchman by a "sou" means five centimes, and would write it down and add it up as five centimes; so also the German would write his thaler as three marks, just as we often speak of a crown, which we write down as 5*s*., and half-a-crown as 2*s*. 6d. The use of such "trivial" names, of which there are many in all countries, is no real argument against a system, nor in most cases a breach of that system.

It is surely an odd thing that the Celsius or Centigrade thermometer scale is so generally thought to belong in some way to the metric system, with which it has no relation whatever. Indeed, it is difficult to understand how any method of graduating a thermometer could have any relation whatever to any system either of weights, measures, or coins. It so happens that in each of the three usual scales—Fahrenheit, Celsius, and Reaumur—the two "fixed points" selected are those of melting ice and boiling water and this is not surprising when we consider the readiness with which practically pure water can be obtained, and the sharpness with which those points of change of its state can be observed. But they are, of course, perfectly arbitrary, and any other constants might be, taken with equal propriety, although, perhaps, with less convenience. Indeed, for exceptional ranges of the scale other means are used for graduation. It is true that in the Celsius scale the range between the freezing and boiling points of water is divided into 100 parts, but it might be just as conveniently divided into 180, as in the Fahrenheit scale, or into 179 or 153 or any other number, for the division is as arbitrary as the fixed points. The fact is that there is only one denomination employed, viz., a degree, and our arithmetic being decimal our thermometer scales are also all decimal. Moreover, the numbers expressing thermometric degrees are only to a very limited extent susceptible to the operations of arithmetic, and when making such calculations we have to state very clearly the conditions. We can define a quantity of heat as that which would raise a given weight of water from a given temperature to another given temperature, and we can say that twice that amount of heat will (within certain limits) raise the same weight of water through twice as many degrees. For example, that a certain quantity of heat will raise a given weight of water from 0° to 5°, and that twice that amount of heat will raise the same weight of water from 0° to 10°, but we cannot say that water at 10° is twice as hot as water at 5°. All our scales are arbitrary, like the so-called fixed points, by means of which they are drawn. It has been argued that the Celsius scale is not so convenient as that of Farenheit because its degrees are too large, and that it is more difficult to obtain averages because temperatures below the freezing point of water are represented with the minus sign. But even if these objections were well based they would apply only or chiefly to the use of the thermometer in meteorology and chiefly in this country. In the tropics the difficulty of the minus sign would be of very little moment; on the other hand, in many countries the winter temperature so frequently passes below the zero of Fahrenheit that a similar difficulty occurs with that scale also. The only way in which this difficulty of change of sign could be really overcome would be by adopting as the starting point the calculated "absolute zero," to reach which "thermal pole" Professor Dewar is making such strenuous efforts. But although all temperatures would then be represented by positive numbers, these numbers would be generally very inconveniently large. As to the size of the degrees, it also is really a question of circumstances. If for meteorological use the Celsius degree may be considered by some to be too large, for other purposes as, for example, in recording the temperature of furnaces, the Fahrenheit degree would be thought by most inconveniently small, giving numbers inconveniently large. All this depends on the purpose to which the thermometer is applied; for some objects it is necessary to record differences of one-hundredth of a degree, and there is no difficulty in doing so with a suitable thermometer; while for other objects 5 or 10 degrees would be a useful unit.

Returning to the main question of weights, measures, and coins, we would conclude by saying, Let us, if possible, for weights and measures adopt, as nearly as may be, that is with as few modifications of terms as possible, the system in use by our neighbours, but if that cannot be, let us at least reduce our own extraordinary "systems" to some one basis with decimal divisions, so that a simple factor will easily convert our quantities into the metric equivalents. Similarly, let us decimalise our coinage, retaining, perhaps, the familiar pound sterling as the unit of account.

But whether this is done soon or not, let us have immediately facilities for the use of metric weights and measures for home or foreign trade without possibility of interference on the part of the "active and intelligent" officers of "local authorities." It is a fact that not long since the London County Council did, by its officers, threaten to seize metric weights if they were found on the premises of several firms at their next visit, where they had been in use solely for packing for foreign trade, although such weights have been for many years declared by Act of Parliament to be legal for general use, but could not be stamped because unfortunately no provision had been made for this operation. It was only when preparations were made for concerted resistance that these benevolent intentions were abandoned.

EXPOSURE IN PHOTOGRAPHY.

BY REV. A. H. BLAKE, M.A.

This is a fearsome question which meets the beginner on his first entry into the field, "How long shall I expose?"

Here is the camera in position, the view focussed according to taste, the dark-slide in position, and its shutter withdrawn, the hand ready on the cap, and to the question of the mind, "I wonder how long I ought to take it off for?" there is no reply, no data upon which to form one, and only blank ignorance of the conditions to be observed and the rules which should guide the hand in making the exposure, and so it is just chance work. Off goes the cap for so long, just at haphazard and with an eager hope that all may be well, though there are great misgivings as to whether the time has been long enough or too long, and no feeling of security or certainty at all.

Now we propose to come up to the beginner's elbow just at this moment to bid him take out his note-book and make certain calculations, and then, after arriving at a result, to take the cap off for the determined period with a feeling of assurance that, bar unforeseen accidents, all must be well, and the errors of exposure so slight

as to be easily corrected, if necessary, in development and to have reached a stage where to lose a plate through wrong exposure shall be the exception; whereas before, the opposite state of things pertained, and he considered himself lucky if he got three out of six of his plates correctly exposed and decently developed into a negative of presentable quality.

One of the chief elements in exposure is the distance of the object to be photographed from the camera.

As a rule the further off objects to be photographed are, the shorter will be the exposure required, although it will be by no means unusual to find the beginner imagining just the opposite to be the case.

The nearer objects are, the longer time, as a rule, will it be necessary to remove the cap from the lens.

Mr. Howard Farmer, of the Royal Polytechnic Institution in Regent's Street, has drawn up a table which is most helpful in this matter, and which, though it has often been printed, is not at all well known by beginners, and it is upon this that our scheme to help the beginner in the matter of exposure is based.

Given an instantaneous plate such as Wratten's medium rapidity, the lens rapid rectilinear, and blue sky and white clouds, the exposure at the different distances will be roughly as follows:

First, near subjects. Up to 10 ft., 1 sec.; 10 ft. to 30 ft., ½ sec.

Distance from the camera is always reckoned, not to the nearest important object, but to the nearest important shadow, because it is that you require to get out; the high lights must take care of themselves. If it is required to photograph objects nearer than 10 feet—as, for example, big heads, etc.—the exposure must be proportionately increased.

Nearer subjects require so much more exposure than longer distance ones, because the shadows are heavy, and there is so much more detail to be registered. If there are no heavy shadows in the near subjects and the sun be shining evenly on all the surfaces, then 1-8th or 1-10th sec. will be ample, even at these near distances.

The second class of subjects are those at moderate distances, say, from 30 to 100 ft., when the exposure will be about ¼ sec.; from 100 ft. to 100 yards, 1/8th; 100 yards to quarter of a mile, 1/16th sec., while objects entirely in sunlight can all be reckoned at 1/16th sec.

The third class consists of what may be known as long-distance subjects, and 1/30th sec. will be the exposure, and they should always be taken in sunlight, unless for special purposes of effect you wish it otherwise.

We have now before us one table to guide us, and before making an exposure we roughly reckon in our minds the distance of the object we require to take, place it in its appropriate class, and approximate, as far as distance is concerned, its proper exposure.

But there are other matters to be observed before we can arrive at our final conclusion and take off the cap.

The exposures which we have given are under ordinary circumstances; when the circumstances are not ordinary, allowance will have to be made.

We have to ask ourselves if the view or object presents unusually light or unusually dark features. In the first case, the exposure may be halved or even quartered, *e.g.*, in the case of open sea subjects, which are not only open in themselves but also full of light, because the sea acts as a hugh mirror and reflects so much of the light of the sky. In the second case we may double or quadruple the average exposure if we have very dark subjects, shadows under trees, red brick buildings, and such like.

Another factor in the exposure will be the height of the sun above the horizon.

Mr. Farmer computes that when the sun is more than 30° above the horizon, we need not take it into consideration, but if it be from 20° to 30°, we may double the exposure, and so on according as it sinks down towards the horizon.

We shall, in estimating our exposure, require also to understand the stops which are supplied with our lens. These are discs having apertures of gradually lessening diameter. Most lenses work at the aperture called *f*/8, so that *f*/8 will be practically the open lens, then *f*/11 will make the aperture half the size and the exposure twice as long. *F*/16 will give an aperture of half the size again, and the exposure again doubles, and so on. It will be clear that we must multiply the exposure by 2, or 4, or 8, etc., as the case may be, to allow for the lessening of the aperture by which the light reaches the plate in using stops.

One more matter, and our conditions which have to be taken into account are practically enumerated.

Allowance must be made for days when our initial conditions of blue sky or white clouds do not pertain. Dull days increase the exposure twofold, very dull fourfold; it will seldom be necessary to make more allowance than this, unless fog and mist be present, and they stop an abnormally large amount of light.

Now we will imagine the beginner with these data before him about to make an exposure.

He calculates the exposure for distance from camera to be 1/16th. The subject has some shadows, which will be a little more than ordinary dark; multiply by 2. The sun is low down on the horizon, between 30° to 20°; again multiply by 2. Stop used is *f*/16, so multiply by 4. Weather dull, again multiply by 2. So that the original estimate for distance, 1/16th, as so modified, will work out to—

$$\frac{1}{16} \times \frac{2}{1} \times \frac{2}{1} \times \frac{4}{1} \times \frac{2}{1} = 2 \text{ sec.}$$

This seems a cut and dried method of working, but we have proved its general accuracy again and again. Working together with a friend who used a meter well known for its wonderful accuracy our estimated exposures were almost identical.

A page of our note-book ready for use, with this scheme for reckoning exposure, will be like this:—

No.	Name.	Lens.	Plate.	Stop.	Average Subject, or not.	Distance.	Sun's Altitude	Dull.	Fog.	Calculation.	Exposure.	Remarks.

Let us work our little sum then without misgiving, and never mind the taunts of the worker who knows the exposure by some certain method of intuition, and the result will be that to lose a plate from exposure will be a rare thing, and we can comfortably return home after a day's outing, knowing that, bar extraordinary accidents, we shall have at any rate a fairly satisfactory negative for every plate exposed; and this is a magnificent feeling for a beginner, who generally lives in a state of extreme trepidation until after he has been to his dark room, as to "whether I shall get them out all right or not, don't you know!"—*Amateur Photographer.*

Calcium Sulphydrate as a Depilatory.—Brayton recommends as certain and quick acting CaH_2S_2. This must always be freshly prepared by introducing H_2S into a paste of well-slaked lime until saturated with gas. The application is to be repeated at intervals of about three weeks.—*Munch. med. Woch.*, xliii., 836.

SIXTY YEARS OF PROGRESS.

BY SIR EDWIN ARNOLD.

The forward march of science during the past sixty years has been nothing less than astonishing. Justly did Professor Huxley call the Victorian period "a revolution of modern minds." Out of the love of knowledge pursued with single hearts before the reign, or at its commencement, by Herschel and Laplace, Young, Fresnel, Cavendish, Lamarck, Davy, Jussieu, Cuvier, Decandolle, Faraday, Tyndall, Darwin, and their like, there sprang up under this Reign the fruit of countless rich practical applications. Three achievements in physical philosophy alone have been sufficient to immortalise the reign — the scientific doctrines, first, of the molecular constitution of matter; secondly, of the conservation of energy; thirdly, of evolution as divined by Darwin.

That last illustrious name shines of itself like a lonely star of glory, sufficient to make resplendent the Victorian constellation of talent. But consider how, practically, all our electrical developments also lie inside this period; with well-nigh all the marvellous utilisation of steam on sea and land; almost all the amazing improvements in mechanical, industrial machinery; almost all the discoveries in hygienic matters; together with vast advances in chemistry, metallurgy, astronomy, physiology, and, we may add, geography, geology, and biology. Only to mention the spectroscope, the camera, the microphone, the phonograph, the telephone, and the kinetoscope—alluded to above—is to use words never heard sixty years ago, though now so familiar. One discovery, as is the wont of Nature, helps to lead to another. The exquisite experiments of Tyndall illuminating floating motes aided Lister to introduce antiseptic surgery and to abolish hospital gangrene. There are those, it is true, like the late Professor Huxley, who resent the idea of utilitarian science. He has said:

"That which stirs the pulses of the votaries of science is the love of knowledge, and the joy of the discovery of the 'causes of things,' the supreme delight of extending the realm of law and order ever farther and farther. In the course of this work, the physical philosopher, sometimes intentionally, but more often unintentionally, lights upon something which proves to be of practical value. Great is the rejoicing of all who are benefited thereby, and for the moment Science is the Diana of all these Ephesian craftsmen. But even while this flotsam and jetsam of investigation is being turned into wages of workmen and wealth of capitalists the crest of the wave of scientific Inquiry is far away on its course over the illimitable ocean of the unknown."

The cynicism latent in this may be forgiven for the sake of its fine intellectual pride and noble passion for Truth, but I am of those who think Truth herself fairest when she is most beneficent, helpful, and generous. With this view I hail, as specially and gloriously commemorative of the Queen's sixty years, the benign extensions of the arts of remedial surgery and medicine during its progress, and particularly the two arch events of the introduction of anæsthetics and of female nursing as a study and profession. From the sanguinary fields of the Crimean War arose, like an angel of compassion and redemption, Florence Nightingale, with all that train of skilled and gentle women, afterwards following her excellent example, who have altered the history of the sick room and regenerated our hospitals. Lister's antiseptic treatment of wounds, already spoken of, founded on the information obtained by Tyndall's electric beam and the microscope, and such experiments as Pasteur's about infinitesimal life, have stripped surgical operations of their previous deadly peril by reason of septic organisms, while—as if Science designed to bestow a specially appropriate boon on the youthful and compassionate Queen—Simpson in Edinburgh, simultaneously with Wells and Morton in the United States, early in her Victorian age performed those merciful experiments with chloroform which terminated the epoch of unavoidable anguish for sick and wounded patients, robbed even war of its worst features, and commenced the present blessed era of anæsthetics. Read what a renowned surgeon, Mr. Brudenell Carter, writes about that happy discovery:—

"The use of anæsthetics has changed the whole aspect of surgery. Prior to 1847, operations were few in number, and were almost limited to the amputation of limbs, the removal of cancerous and other tumours, the resection of a few of the larger joints, cutting for stone, and the ligature of main arteries for aneurism. The pain suffered by the patients was so horrible as to tax severely the endurance of the bravest and strongest, and to depress seriously, and often beyond recall, the powers of life. Death from shock was by no means uncommon, the patient sinking in a few hours from the effects of the suffering which he had undergone. The writer well remembers, as a medical student, turning sick and faint at the agonies which he was called upon to witness; and it was a point of honour with operators in those days to abbreviate such agonies as much as possible, and to cultivate speed in operating as the highest and the most valuable form of dexterity. Nothing was attempted which could not be done quickly, and an amputation in the hands of a practised surgeon had almost the appearance of a feat of legerdemain. For the separation of the lower limb above the knee—of course, not including dressing—twenty seconds has been known to suffice, and forty seconds was regraded as a period of time which no one was justified in exceeding. When anæsthetics were employed, it came to surgeons as a kind of revelation that they need no longer be in haste, and they have utilised that knowledge in making leisurely examination and safe procedure."

I am almost more grateful for the tardy arrival of this anæsthetic revolution in the train of her Gracious Majesty than for railways, steamships, and electric telegraphs, for the great armies and navies, for vast expansions of Imperial territory, and even education, photography, Constitutional liberties, or anything else. It was so strange, so tantalising to a lover of his kind that what Humphry Davy had so long before noted and imparted about nitrous oxide should pass unnoticed and unapplied. The key was already there, but not until many years afterwards did an almost casual hand (that of an American dentist) fit it into the golden door, behind which sat waiting an Angel of Pity, kinder and more powerful than any Arabian fairy suddenly revealed in her divine beauty and bountifulness to any Prince or Magician of the "Thousand and One Nights." Before now I have asked whether there is anything anywhere in human history which more sternly teaches that man must win every boon of Nature by his own ceaseless striving, than the fact that this simple chemical and physiological secret of chloroform should have lurked so long in its easy formula, undeciphered through all those waiting generations when Pain was an omnipresent Tyrant whom Science could not control, and the operating room a torture-chamber, dreaded almost as much by the surgeon as by the sufferer? Think of those gallant sailors of Nelson at Trafalgar, whose bleeding stumps, in the gloom of the orlop deck, were plunged into hot pitch to stay the hæmorrhage!

One would almost expect that, out of pity towards such brave men, and for the sake of the countless tender women and children, who, age after age, so hopelessly endured their anguish, Nature herself would have burst her iron law of impassive silence, and, as Helen did in the Odyssey for the sorely-tried Greeks, have poured this pitying nepenthe into the bitter cup of mortal life. Not until 1847, however—although Davy had been so very near the revelation in 1839—did the anæsthetic age commence, giving to surgical art a sure control of agony, to its boldest practices confidence, quiet, and leisure, and to those who are constrained to come under that knife a sweet and complete oblivion. I have myself known what it is to pass, fearless of the kind steel, into that world of black velvet-like tranquility, of which these magic drugs now keep the gate, and to awake as good as healed, grateful beyond words for the soft spell of enchanted peace and the sure and faithful skill. This unspeakably good gift to mankind was of the American dentist's and of Sir James Simpson's giving, a participated glory of the Reign, like

that of the new School of Nursing, which has wrought so much benefit and created a fresh vocation for many a young woman's gentle energies. In 1837 there was no proper nursing. There were Mrs. Gamp and Mrs. Betsy Prig, or else heavy-handed and heavy-footed male attendants, rudely different in mind, manner, and influence from the lightly-moving and soft-speaking females whose trained intelligence and care now smooth every sick pillow, and faithfully discharge the ordinances of the doctor. There is no doubt the change was primarily due to the example of Miss Florence Nightingale—one of the glories of the reign—who went, at the head of a band of nurses—many among them of high birth—to the Crimean hospitals, and by demonstrating there, and afterwards, the boundless advantages of skilled and first-class nursing, gave to the Victorian Age the advantages of this modern system, and to a large number of her sex a new, suitable, and most honourable vocation.—*Daily Telegraph.*

ON THE PERIODIC CLASSIFICATION OF THE ELEMENTS.

BY DR. WYROUBOFF.

If the classification of Prof. Mendeleeff had remained what it was at its outset, *i.e.*, a very interesting and highly ingenious table of the analogies and the dissimilarities of the simple bodies, I should never have entertained the idea of discussing it. But M. Mendeleeff has aimed at producing something more and better than a mere *catalogue raisonné* of the elements. He converted his classification into the periodic system. It was a philosophic view, borrowing arguments from the kindred sciences, and imposing itself on us by its universality. He formulated, as the fundamental law of the physico-chemical sciences, the dictum that "all the properties of bodies are periodic functions of their atomic weights."

It would seem that, in view of a question so distinctly put, the first duty of the *savant* must be to intervene, as has been done with particular laws, to check and verify them down to the utmost details. This has not been done—not even dreamt of—and we find, not merely in special researches, but even in works of elementary instruction, the periodic law accepted as a reality beyond all disputes. Periodicity being the general and infallible law, the table of Mendeleeff could not err. In works otherwise excellent I have met with the assertion that "no chemical argument could avail against the periodic law."

On reaching this point of its development, the conception of Prof. Mendeleeff becomes essentially injurious. Under pretex of a law which has still to be demonstrated, it forbids us to throw light upon pure matters of observation, and forces us to remain in a vicious circle from which there is no escape. I think that it is time to show clearly that there is nothing which merits the name of law or system. I shall consider here merely properties of a purely chemical order, the only ones which chemists have to take into account. Let us take on the one part the atomic weight, and on the other the valence. I say that between these two facts, both constituting chemical attributes absolutely irreducible, we do not see any kind of necessary connection. No known law permits us to conclude that between these two orders of things, absolutely distinct, there is any relation which we may establish without leaving the proper sphere of chemistry. The "periodic law," which claims to establish such a relation, gives us no theoretic antecedent. This by no means implies that it is necessarily false: it signifies merely that it is an empirical law, and as such it is bound to furnish multiple proofs of validity. Among these proofs, without which no empirical law even can acquire the "freedom af the city," it must be demonstrably free from exception. As Mendeleeff puts it:—"The laws of Nature admit no exception; therefore the periodic law must be considered as a law of Nature definitely established, which must be accepted or rejected as a whole" ('Elements de Chimie,' 1889, 5th Russian edition, p. 465).

A surprising exception is presented by the atomic weight of tellurium. Professor Brauner, who has made a specialty of the art of causing reluctant elements to enter into the classification of Mendeleeff, opens his memoir by laying before us two alternatives: we must either reject the "periodic law" or reject the figure 128 which all authorities have found for the atomic weight of tellurium. But he continues, as the periodic law cannot be rejected, since it is the truth itself, the value 128 must be inaccurate.

He has therefore submitted tellurium to all the tortures which a substance can undergo. He has melted it, sublimed it, oxidised it, hydrogenised it, dissolved it, and precipitated it, and finally arrived at the result which everybody had reached before him, that the atomic weight varies between the wide limits of 125 and 129. Hence he concludes that we have here a complex body composed of two elements of very different atomic weights. What are these weights, and what are the distinctive properties of tellurium α and tellurium β he does no tell us, for he has not been able to separate them. Still, he takes the number 125 as representing true tellurium, and Prof. Mendeleeff introduces this number in his table, though it has not yet been confirmed by any one.

Professor Mendeleeff admits for the three cerite metals La=138, Ce=140, and D_1=192. He required this succession, since cerium yielding a higher oxide could not be placed upon the ascending branch of the curve before lanthanum. But Marignac, Bunsen, Jegel, Rammelsberg, and Wolf have found Ce=138, with deviations not exceeding one or two units of the first decimal. Prof. Brauner, alone has obtained 140 by the calcination of the sulphate, a process absolutely defective, as Schützenberger has recently pointed out. As for lanthanum, the majority of recent determinations lead to a figure very near 138·5. Mendeleeff, to give more symmetry to his curve, selected that which presents the lowest figure. As for didymium, it is especially embarrassing for the periodic classification. In 1886 it was split up by Auer von Welsbach into neodymium (Nd=141) and praseodymium (Pr=142 6). Now, this latter gives on calcination an oxide higher than R_2O_3, whence neodymium ought to be placed on the same horizontal line as lanthanum. This part of the curve would then become quite irregular, whence Mendeleeff retains in his table of 1889 the old didymium, contenting himself with asserting that the two new metals ought not to be simple bodies, and that there is no occasion to occupy ourselves with them. The arbitrary selection of oxides and of atomic weights is the gravest critique which we are justified in addressing to Prof. Mendeleeff.—*Les Actualities Chimiques*, through *Chemical News.*

MANUFACTURE OF POTASSIUM CHLORATE.—Bayer (*Chem. Zeit.*) thus describes a new method for the manufacture of potassium chlorate. Chlorine is led into a cream of zinc oxide and water, until finally a clear solution of zinc chloride and hypochlorite results. The conversion of the hypochlorite into chlorate readily takes place when the solution is heated with the requisite quantity of potassium chloride, and the yield is almost theoretical. A still better plan is to add the requisite quantity of potassium chloride to the zinc oxide and water, and pass the gas into this mixture kept at a temperature of 90°–95°. The resulting solution is evaporated down to 30° B., when, on cooling, the potassium chlorate crystallises out nearly pure. A further crop may be obtained by evaporating down to 60° B. The final mother liquor is treated with hydrochloric acid and evaporated down until the zinc chloride solidifies.—*J. C. S. Abs. Inorg. Chem.*, lxx., 517.

CULTIVATION OF INDIGO IN MEXICO.

Indigo is cultivated in Chiapas, in Colima, in Guerrero, Jalisco, Michoacan, and in Oaxaca. Three kinds are found, namely, *I. tinctoria*, *I. disperma*, and *I. ãnil*. The spring is the best time for sowing, and in the months of September and October the plants begin to flower, while in order to save the indigo in them, especially in the leaves, the stems are cut as soon as the yellow leaves appear on them, or the little buds begin to bloom. The substances which form indigo reside in the leaves, but the whole plant is subjected to the process of fermentation and agitation, by which the dye is manufactured. Two cisterns or vats are prepared, the first about eight by sixteen feet and 5 feet deep, and the second twelve feet square and 4 feet deep, and below the second a third may be placed into which the contents of the second is run and allowed to stand for the dye to settle at the bottom. Unless, however, the operation is done on a large scale, the settling of the fluid can take place in the second cistern. Bundles (about 125 pounds each) of freshly-cut plants are placed in the first cistern, and water is then run in so as to cover them to a depth of three or four inches from the top. A few hours after the introduction of the water it becomes turbid, then turns to a beautiful emerald green; the solution sets free carbonic acid gas, and traces of ammonia, and discoloured pellicles float on the surface.

The fermentation generally lasts from twelve to sixteen hours, and that according to the stage of the growth of the plant; if the plant is fully matured, going into seeding, the fermentation should last from twelve to sixteen hours, but if the stems are cut when flowering, the maceration should be stopped in ten or twelve hours. A sure indication as to the time when the solution should be transferred consists in the gas bubbles disappearing almost altogether, or when the solution, by rapidly stirring it in a glass vessel, forms small blue flakes which in a little while separates into granules. The solution, when run off into the second cistern, is constantly agitated for a period of from one and a half to three hours. The liquor may be agitated by some mechanical contrivance, a hydraulic wheel, or by men going into the cisterns, beating and churning the fluid with wooden paddles. As the beating goes on the green liquor becomes of a deeper colour, violet, and then gradually turns to a very deep blue. Then a small quantity of a precipitate called "cuajo" or lime water is added in order that it may combine with the carbonic acid formed during the process of fermentation and help the precipitation by coagulating the fluid. This precipitant is prepared from a wild white grape called "olavere" found in the Isthmus of Tehuantepec and Chiapas, from a wild tree known as "quagatinta," and from the leaves of the marshmallow.

After introducing the coagulating fluid the whole is stirred up, and then the colouring matter is allowed to settle, and in two or three hours the indigo will have subsided in flakes and the amber-coloured fluid will have remained on the top. This clear fluid is drawn off by means of the cocks until nothing is left in the cistern but the indigo, which looks like a bluish-black mud. This mud-like stuff is then taken out and put into conical linen bag filters, which are hung up so as to allow the surplus moisture to drain away. The dye is afterwards taken out of the bags and placed in a large cement-lined kiln, where a gentle heat is applied until the whole is rendered dry. It is then subjected to hand-mill pressure, thereby formed into blocks stamped with the plantation mark and placed in heavy boxes, each holding twenty-five pounds. The actual cost of indigo raising amounts for the first year to 66 dollars 88 cents per hectare, and for the following year will be about 53 dollars. The above information is obtained from the important report of Sir Henry Dering on the "Productions of Mexico."—*Journal of the Society of Arts.*

NOTES AND FORMULÆ.

PHARMACY OF THYROÏDINE.

Thyroïdine Pills.—Thyroïdine, 2 grammes; kaolin, 2 grammes; vanillin, 1 centigramme; mucilage of tragacanth, *q.s.* Divide into 30 pills, coat with chocolate. Dose from 1 to 5 pills per diem.

Thyroidine Pastilles.—Thyroïdine, 2 grammes; vanilla chocolate, 18 grammes. Divide into 20 pastilles. Dose 1 to 4 pastilles per diem.—*Rev. Pharmaceut.* [new ser.], ii., 240, after *Merck's Annalen.*

CALOMEL AND ANTIPYRINE INCOMPATIBLE.

The feeble alkalinity of antipyrine is sufficient to slowly decompose calomel, forming mercurous oxide, mercuric chloride and metallic mercury, and antipyrine chlorohydrate. These two bodies should not therefore be prescribed together.—*Répert. de Pharm.* [3], vii., 355, after *Chemiker Zeit.*

BENZENE CLEANSING EMULSION.

Benzene, 500; petroleum ether, 500; hard soap, 3 parts; distilled water, *q.s.* to make an emulsion. The soap is dissolved in 50 to 60 parts of tepid water in a large bottle, the benzene and petroleum ether previously mixed are then gradually added with constant shaking. If the emulsion does not readily form, its completion may be hastened by the addition of 50 or 100 parts of tepid water. This emulsion removes grease and stains from cloth, etc., more readily than its component ingredients separately.—*Répert. de Pharm.* [3], vii., 356, after *Pharm. Post.*

BACTERICIDAL POWER OF TRICRESOL.

According to Boronstein, tricresol possesses very powerful germicidal properties, and is a valuable antiseptic. In a one per mille solution it destroys most microbes, excepting, however, *Bacillus pyocyanicus.* The streptococcus of erysipelas is killed by all solutions above 2 per mille. A 1 per mille solution kills Erberth's streptococcus in five minutes, and the specific bacillus of cholera and Lœffler's bacillus in three minutes. It is considered likely to yield good results on further experiment.—*Rev. de Thérap. Med. Chirurg.*, lxiii., 495.

DETECTION OF COTTON IN WOOLLEN FABRICS.

Five grammes of the shredded material is placed in a large beaker with 200 C.c. of ten per cent. caustic soda solution, and gradually heated to boiling in about twenty minutes. Wool is entirely dissolved; the solution is filtered off, the residual cotton is washed, dried, and weighed. —*Annales de Chim. Analytique*, i., 321, after *Apoth. Zeit.*

TOOTHACHE REMEDY.

Cocaine hydrochlorate, 1 part; camphor and chloral hydrate, of each 50 parts. Mix and add a few drops of water, so as to obtain a clear solution. A plug of cotton wool moistened with a little of the solution is introduced into the cavity of the painful tooth, and left there for twenty-four hours.—*Rev. Pharmaceut.*, new ser., ii., 220.

COMBINATION OF ALOIN AND FORMALIN.

Merck, of Darmstadt, has patented a combination of aloin and formalin, which he obtains as a condensation product by treating a warm mixture of aloin, water and formalin with sulphuric acid. The condensation body separates in yellow flocculent particles, partially resinified, which are washed free from adhering sulphuric acid with water. The compound is suggested for use as a substitute for aloin, since its slight solubility renders it almost tasteless.—*Mon. Sci.* [4], x., Append., 97.

PHARMACEUTICAL JOURNAL.

A Weekly Record of Pharmacy and Allied Sciences.

ESTABLISHED 1841.

Circulating in the United Kingdom, France, Germany, Austria, Italy, Russia, Switzerland, Canada, the United States, South America, India, Australasia, South Africa, etc.

Editorial Office: 17, BLOOMSBURY SQUARE, W.C.
Publishing and Advertising Office: 5, SERLE STREET, W.C.

LONDON: SATURDAY, SEPTEMBER 26, 1896.

PRESCRIBING AND DISPENSING.

THE attention directed to the subject of "counter prescribing" at the meeting of the British Medical Association has naturally given rise to various comments by members of the medical profession. On the whole, it may be admitted that the views expressed by several correspondents in the *British Medical Journal* are reasonable enough, so far as they relate to the desirability of a separation between the work of prescribing and dispensing. On that point there would probably be a very general agreement. But in regard to the feasibility of such an arrangement there is perhaps equal probability of disagreement. In the case of remote country districts, too thinly populated to support a chemist dispenser, the *Medical Press and Circular* very justly remarks that disease could not be combated unless the doctor were allowed to dispense medicines to his patients. That argument, from the point of view of the medical practitioner, cannot be disputed; but it is insufficient to settle the question at issue. On the contrary, it shows the impracticability of the proposal to have a legislative settlement of the right to prescribe and to dispense. It seems to be impossible to get beyond the conclusion that prescribing by chemists is undesirable, and that it is equally undesirable for medical men to dispense medicine. Circumstances must determine—as the illustration referred to in the *Medical Press and Circular* shows—whether deviation from a strict interpretation of the functions of doctor and pharmacist is allowable. In either case, disability is a special consequence of the relation between medicine and pharmacy.

As to the legality of a doctor's dispensing, or the illegality of a chemist's prescribing, on which some writers are disposed to insist, it is more probable that discussion would be better avoided. In last week's *British Medical Journal* Dr. COOKE writing from Plymouth, takes a very decided view as to the fitness of the medical man to dispense being so very much more unquestionable than the capability of the chemist to prescribe. He founds that view upon the assumption that "the doctor has learned quite sufficient of the nature and properties of drugs to enable him to perform the very simple operation of measuring them and mixing them." This argument, however, is only the counterpart of that urged by the chemist who thinks he has learnt enough of the uses of medicines for relief of disease to enable him to prescribe them. By such modes of dealing with the subject no good result is to be expected, but on the contrary considerable mutual irritation. Moreover, it is not because of the qualification that a medical man has that he is more entitled to prescribe than any other member of the community. The qualification does not give an exclusive legal right to prescribe, but it is only a means by which the public are enabled to distinguish persons who have been properly trained for the practice of medicine from others who have not. Another writer in the *British Medical Journal* considers that there are many reasons why it would be much better for the medical profession itself, as well as for the public at large, if dispensing were left to the pharmaceutical chemists, as being the best fitted for it, and among the reasons affecting medical practitioners he suggests that dispensing lowers the dignity of the profession and brings its members "almost to the level of a druggist." We do not attach much weight to the loss of dignity the doctor suffers by dispensing, except in so far as it is the result of his doing work outside of his own proper function. It is rather the claim to a right to dispense which connects the doctor with the shopkeeper, for it is only as the inheritor of the recognised right to practise pharmacy, which the old shopkeeping apothecary actually possessed, that medical men can support any such claim at the present day.

The illiberality of feeling indicated by the quotation just referred to is still more strikingly manifested in the letter of Dr. COOKE, who appears to look upon the work of dispensing medicine as being comparable with the sale of tea by the grocer. With such an opinion it does not create surprise that he asks why a pharmacist should be paid so much more highly for his skill, nor can it be wondered at that he should appear to be ready to furnish medicine without addition to his ordinary fee. Such indications of want of good feeling may, however, be left without further notice, because they do not materially affect the real merits of the question to be settled between doctors and chemists. The great object is to remove such obstacles to a mutually satisfactory settlement, and to arrive at agreement without discussion of questions as to legality. A recognition of the fact that "the chemist is often more sinned against than sinning" is more likely to lead to that result than continual denunciations of the illegality of his prescribing, which are often based upon the assumption that such prescribing is objectionable because it involves a larger amount of "diagnosis and therapeusis" than a chemist would be capable of; whereas, in the great majority of cases, it amounts to little more than a recommendation that might be made by any one member of the public to another, and does not in any greater degree overstep the bounds of a chemist's pharmaceutical functions.

The remarks made on this subject by Mr. WALTER HILLS two years ago deserve the careful consideration of medical men as well as pharmacists, for they not only represent the view that has always been held by the leaders of pharmacy as to the proper limitation of a pharmacist's work, but also show that good feeling between medical men and chemists might be greatly promoted if the dispensing of medicines were more generally entrusted to the hands of those who have been specially trained for the work.

ANNOTATIONS.

THE SCHOOL OF PHARMACY of the Pharmaceutical Society of Great Britain will commence work on the new lines recently laid down, on Monday, October 5. The prizes are to be awarded to the successful students of the past session on the afternoon of that day, by Mr. Walter Hills, President of the Society. As the present-day representative of Jacob Bell, Mr. Hills is deeply interested in the fortunes of the School, and it is hoped that he may be confronted with a full house when, for the first time as President, he takes the chair at a meeting of the Society.

THE INAUGURAL SESSIONAL ADDRESS, which may now be regarded as an indispensable formality, will be delivered, after the distribution of prizes, by Mr. R. Brudenell Carter, F.R C.S., who, in his capacity of member of the Pharmacopœia Committee of the General Medical Council, is brought into close touch with pharmacists at the present time. The undoubtedly sympathetic relations between the two professions should ensure him a considerable audience on this occasion.

THE SOCIETY'S HOUSE—as it is yet customary to speak of the premises, though the different departments have gradually absorbed several houses—will be open for the inspection of visitors at the conclusion of the meeting. Extensive cleaning and redecoration at "No. 17" have had the effect of bringing out many of the architectural features of the old house to advantage, and members who have not recently visited headquarters are strongly urged to do so on Monday week.

NEW STUDENTS will be received by the Dean (Professor Greenish) and the Professors of Botany and Chemistry between the hours of 10 a.m. and 1 p.m. on the opening day. All information relating to the courses of study will then be furnished and advice be given by the professors with reference to their special subjects. In this connection it may be observed that, just as the early bird catches the worm, so will the students who apply earliest have the first choice of benches in the chemical laboratories, a matter of some importance as past students know from experience.

THE ADVANCED COURSE, which we may remind students will commence simultaneously with the elementary course, is not likely to be largely attended at the outset, but for the credit of pharmacy it is to be hoped that no reproach on this score may be levelled at the School as time rolls on. A suggestion that seems worthy of consideration is to the effect that those who have already gained their diplomas, and would like to freshen up their knowledge, might well attend one or other of the series of advanced lectures, regarding this attendance in the light of post-graduate work. At any rate, there could be no possible objection to such a course being pursued, and there is ample accommodation for all who care to come.

SIR JOSEPH LISTER was entertained by the students of University College, Liverpool, at a smoking concert held in the large hall of the Adelphi Hotel, on Friday, the 18th inst., and on the following evening the medical practitioners of Liverpool and the neighbourhood again entertained him, the occasion being a banquet in the Philharmonic Hall. A unique spectacle was witnessed during the dinner, several hundred nurses in the uniforms of their respective hospitals filling the galleries and platform. In responding to the toast of his health, the guest of the evening waxed eulogistic over the advantages possessed by Liverpool. Unlike London, he said, the city enjoyed the benefits of a teaching university, and the professors and students were thus brought into daily contact and direct sympathy. Sir Joseph was received with great enthusiasm on this occasion, as on every other when he appeared during the meeting at Liverpool, and altogether, the creation of a record by having a practising surgeon in the presidential chair of the British Association appears to have been an unqualified success.

THE MANUFACTURE OF CHLORINE was an eminently suitable topic for the Chemistry Section of the British Association, at the Liverpool meeting, and no more able exponent of the subject could be found than Mr. Ludwig Mond, who must be classed amongst the creators of chemical industry. The history of the search after cheap chlorine is also the history of the alkali industry during recent years, and is lucidly and concisely given in the address which will be found in this week's Journal at page 282 *et seq.* The remainder of Sir Joseph Lister's excellent address is unavoidably held over until next week.

THE METRIC SYSTEM came up for discussion at the meeting of the British Association, a paper being read by Mr. F. Toms, in which he pointed out that, admirable as the system is for scientific purposes and large commercial transactions, the decimal divisions are not well adapted to the small dealings which prevail among the less educated portion of the community who form the great mass of the British nation. He suggested that the better plan would be to combine the new and old systems, the English measures being made to accord with the French. This is practically the same idea that was mooted some time ago, *i.e.*, to accept the metric weights and measures, but apply to them for common use the names of existing weights and measures. Thus, if the metre were termed a yard, it would be increased by a tenth only, and could be as easily divided into fourths and eighths as into tenths. Similarly with the other chief weights and measures: the pint measuring only half a litre would tend to sobriety, the pound of half a kilogramme should please housewives, and the ton of one thousand kilos. with its subdivisions would save much time in calculation.

MR. WILLIAM MARTINDALE, however, does not like this idea (perhaps it is too simple for him), and proposed, in opposition to Mr. Toms, that a definite time should be fixed at which the adoption of the metric system should be made compulsory. Sir Frederick Bramwell also objected to the proposed compromise, but from a different standpoint to Mr. Martindale. The metric system, he said, is not so easy as it is thought to be, and he also insisted that calculations are more readily performed by vulgar fractions than by the use of decimals. And, Sir Frederick having been supported in his heretical views by others, there the matter rests for the present.

METRIC TERMS are not mis-spelled in the United States (see *ante*, p. 73), according to the *Bulletin of Pharmacy*, which advances many wordy arguments in the attempt to prove that the English have done wrong to adopt the French spelling. Apparently our contemporary prefers terms "Made in Germany," and seems to regard England as singular in not doing likewise, ignoring the fact that Remington's 'Pharmacy' agrees with us in objecting to change for the sake of change. Curious as it may appear to the writer in the *Bulletin*, it is not customary in England to adapt the orthography of all words borrowed from other tongues to the genius of the native language. Neither is it the custom to do the opposite. Bnt we have always been accustomed to write "metre," "litre," and "gramme," and find no difficulty in so doing, whilst in the case of the last-mentioned term we avoid the risk of confusing the word with "grain." Even the U.S.P. spells the word "gramme," though

adopting the Germanic "meter" and "liter." However, these slight differences in the usages of different countries are of slight importance. It would be much more to the point were all to agree to a uniform system of abbreviations for the metric terms, on the lines of those adopted in the U.S.P. Thus "gm." looks remarkably like "gn." or "grn.," but if written with a capital letter—thus "Gm.," the likeness disappears. Similarly, let us use "C.c." for cubic centimetre, "Mm." for millimetre, and so forth.

The Sale of Phosphorus Paste by grocers ought not to be encouraged, in the opinion of the deputy-coroner for Wandsworth and the jurors who investigated the circumstances attending the death of an elderly woman who had consumed the contents of several bottles of that preparation. It appeared from the evidence that for many years past deceased had suffered from a painful internal disease. A year ago she made an unsuccessful attempt to take her life by drinking some iodine mixture. On the 12th inst. she sent a little girl to a grocer's shop near by for two penny bottles of phosphorus paste, telling her to inform the shopkeeper that it was for killing some mice. Later in the day she sent the girl for three more penny bottles, remarking that what she had previously bought "was no use." On Monday she was in a dying state, and to Dr. A. Aulad, who was called in, she admitted that she had taken the contents of five bottles of the phosphorus paste. Death resulted from phosphorus poisoning. The keeper of the grocery store said he did not sell all the five bottles, his wife having sold the last three, and that he should refuse to sell five or even three bottles unless he was given a good reason. The deputy-coroner having pointed out that unfortunately there was no restriction on the sale of this poison, the law requiring amending in that direction, the jury returned a verdict of "suicide while of unsound mind," and added a rider expressing the opinion that some restriction should be placed on the sale of such poisons as phosphorus paste.

Mr. Herbert Lister Oxley, whose death was briefly recorded last week, was more than a mere "chemist and druggist." For the last five years he has acted as curator of the Ilkley Museum, and he was well known locally for his skill as a geologist and botanist, besides having a fair knowledge of chemistry, entomology, and numismatics, and being an authority on various archæological subjects. He was frequently appealed to regarding disputed points in scientific subjects, and never in vain, for if he could not of his own knowledge supply the required information, he possessed the faculty, invaluable in a curator, of knowing always where it could be found.

Cheap Microscopes, as Mr. Henry Crouch points out, in reply to the correspondent of the *Saturday Review* referred to last week (p. 260), have been and are obtainable in England of better quality than competing Continental models. The great impetus given to the use of foreign instruments in this country during recent years was due to the association of the firm of Zeiss with Professor Abbe—the first theoretical optician of his time—and the fact that the Jena firm was naturally the first to benefit by the improvements effected by him. German microscopes then became the fashion, and men of science, like others of the genus *Homo*, are greatly influenced by fashion. English makers, however, have also proceeded on the lines indicated by Abbe and spent themselves in the competition with a fair share of success, "although not favoured with the gratuitous trumpeting so lavishly bestowed upon their Continential rivals, to their great benefit." The last few words exactly sum up what is now taking place in many directions, wise men in their ignorance giving free advertisements to the chief competitors of their countrymen.

Carbolic Acid in a china mug on a locker "where drinks for the patients were also kept," recalls a one-roomed cottage rather than a hospital, yet a nurse at Guy's Hospital said there was no other place to keep the acid in the ward of that institution where she was engaged. As a result, one of the patients drank the acid during the absence of the nurse and died. It is reported that at the inquest a Dr. Salter explained that deceased only drank an ounce and a half of dilute acid (1 in 20), and that this would not have hurt him if he had not been in a terribly precarious state (*sic*). In addition to this remarkable statement he is understood to have remarked that the same thing had happened before without ill-effects. The jury returned a verdict of "accidental death," but suggested that distinctive marks should be placed on the mugs. Someone is lucky that the verdict was not "manslaughter." As it is, the circumstances would seem incomprehensible, were it not known that members of hospital medical staffs are so frequently satisfied with the merest pretence at supervision, and are generally content to let the nurses exercise their own sweet will in the wards.

The Chemists' Assistants' Association recommences operations on Thursday, October 8, at 9 p.m., when the President, Mr. C. Morley, will deliver an inaugural address. On the following Thursday social feelings pent up during the long summer months will find an outlet at a smoking concert to be held at the Frascati Restaurant, and a week later the actual work of the session begins, R. G. Guyer leading off with a paper on wax analysis. Then will follow, in order—(October 29) short papers by members; (November 5) a history of biological science, by J. Morley Taylor; (November 12) the annual conversazione at the Portman Rooms; (November 19) notes on American pharmacy, by E. H. Gane, an old "Square" man and former Secretary of the Association, now in the "States"; (November 26) a paper on palms and their products, by John R. Jackson, the esteemed Curator of the Museum at Kew; (December 3) a Cinderella dance at the Portman Rooms; (December 10) a paper on the foundation of chemistry as a quantitative science, by C. A. Hill; and finally, on December 17, a musical and social evening to prepare the way for Christmas festivities. The programme is pleasantly diversified and exceedingly attractive.

Pure Beer and how to obtain it, will shortly occupy the attention of a Committee consisting of the Earl of Pembroke (Chairman), Dr. James Bell (late Principal of the Inland Revenue Laboratory), Sir J. H. Gilbert, Professor Odling, Mr. H. W. Primrose (Chairman of the Board of Customs), and Mr. Clare Sewell Read, with Mr. W. Blain, of the Treasury, acting as Secretary. The exact task of the Committee is to inquire into and report upon the questions whether legislation is required to prevent the use of deleterious substances in the manufacture of beer, and whether the materials of which beer may be composed can be defined by law without undue interference with the liberty of brewers to use any wholesome materials in brewing. The work required is involved, but the results should be useful.

Simplicity in Medication is recommended by Peter Mere Latham in a passage quoted by the *Practitioner*. To bring many important remedies together, he says, and unite them by a lucky combination, then compressing them within a small compass, and so placing them within the common reach, gives a facility of prescribing which is hurtful to the advance of medical experience. "The facility of prescribing is a temptation to prescribe; and under this tempation there is a lavish expenditure continually going on of important remedies in the mass, of which the prescribers have made no sufficient experiment in detail. A simple implement or two, which a man has well proved for himself, is worth a whole armoury of famous compounds taken upon the general credit."

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

CHEMISTRY SECTION.

Opening Address by Dr. Ludwig Mond, F.R.S., President of the Section.

THE MANUFACTURE OF CHLORINE.

In endeavouring to fix upon a suitable theme for the address I knew you would to-day expect from me, I have felt that I ought to give due consideration to the interests which tie this magnificent city of Liverpool, whose hospitality we enjoy this week, to Section B of the British Association.

I have therefore chosen to give you a brief history of the manufacture of chlorine, with the progress of which this city and its neighbourhood have been very conspicuously and very honourably connected, not only as regards quantity—I believe this neighbourhood produces to-day nearly as much chlorine as the rest of this world together—but more particularly by having orginated, worked out, and carried into practice several of the most important improvements ever introduced into this manufacture. I was confirmed in my choice by the fact that this manufacture has been influenced and perfected in an extraordinary degree by the rapid assimilation and application of the results of purely scientific investigations, and of new scientific theories, and offers a very remarkable example of the incalculable value to our chemical interests of the progress of pure science.

Early History of Chlorine.

The early history of chlorine is particularly interesting, as it played a most important *rôle* in the development of chemical theories. There can be no doubt that the Arabian alchemist Geber, who lived eleven hundred years ago, must have known that "Aqua Regia," which he prepared by distilling a mixture of salt, nitre, and vitriol, gave off, on heating, very corrosive, evil-smelling, greenish-yellow fumes; and all his followers throughout a thousand years must have been more or less molested by these fumes whenever they used Aqua Regia, the one solvent of the gold they attempted so persistently to produce.

But it was not until 1774 that the great Swedish chemist Scheele succeeded in establishing the character of these fumes. He discovered that on heating manganese with muriatic acid he obtained fumes very similar to those given off by "Aqua Regia," and found that these fumes constituted a permanent gas of yellowish-green colour, very pungent odour, very corrosive, very irritating to the respiratory organs, and which had the power of destroying organic colouring matters.

According to the views prevalent at the time, Scheele considered that the manganese had removed phlogiston from the muriatic acid, and he consequently called the gas dephlogisticated muriatic acid.

When, during the next decade, Lavoisier successfully attacked, and after a memorable struggle completely upset, the phlogiston theory, and laid the foundations of our modern chemistry, Berthollet, the eminent "father" of physical chemistry—the science of to-day—endeavoured to determine the place of Scheele's gas in the new theory. Lavoisier was of opinion that all acids, including muriatic acid, contain oxygen. Berthollet found that a solution of Scheele's gas in water, when exposed to the sunlight, gives off oxygen and leaves behind muriatic acid. He considered this as proof that this gas consists of muriatic acid and oxygen, and called it oxygenated muriatic acid.

In the year 1587 Berthollet conceived the idea of utilising the colour-destroying powers of this gas for bleaching purposes. He prepared the gas by heating a mixture of salt, manganese, and vitriol. He used a solution of the gas in water for bleaching, and subsequently discovered that the product obtained by absorbing the gas in a solution of caustic potash possessed great advantages in practice.

This solution was prepared as early as 1789, at the chemical works on the Quai de Javelle, in Paris, and is still made and used there under the name of "Eau de Javelle."

James Watt, whose great mind was not entirely taken up with that greatest of all inventions—his steam-engine—by which he has benefited the human race more than any other man, but who also did excellent work in chemistry—became acquainted in Paris with Berthollet's process, and brought it to Scotland. Here it was taken up with that energy characteristic of the Scotch, and a great stride forward was made when, in 1798, Charles Tennant, the founder of the great firm, which has only recently lapsed into the United Alkali Company, began to use milk of lime in place of the more costly caustic potash, in making a bleaching liquid; and a still greater advance was made when, in the following year, Tennant proposed to absorb the chlorine by hydrate of lime, and thus to produce a dry substance, since known under the name of bleaching powder, which allowed the bleaching powers of chlorine to be transported to any distance.

The Art of Bleaching in 1799.

In order to give you a conception of the theoretical ideas prevalent at this time, I will read to you a passage from an interesting treatise on the art of bleaching published in 1799 by Higgins. In his chapter "On bleaching with the oxygenated muriatic acid, and on the methods of preparing it," he explains the theory of the process as follows:—

"Manganese is an oxyd, a metal saturated with oxygen gas. Common salt is composed of muriatic acid and an alkaline salt called soda, the same which barilla affords. Manganese has greater affinity to sulphuric acid than to its oxygen, and the soda of the salt greater affinity to sulphuric acid than to the muriatic acid gas; hence it necessarily follows that these two gases (or, rather, their gravitating matter) must be liberated from their former union in immediate contact with each other; and although they have but a weak affinity to one another, they unite in their nascent state, that is to say, before they individually unite to caloric, and separately assume the gaseous state; for oxygen gas and muriatic acid gas already formed will not unite when mixed, in consequence principally of the distance at which their respective atmospheres of caloric keep their gravitating particles asunder. The compound resulting from these two gases still retains the property of assuming the gaseous state, and is the oxygenated muriatic gas."

Interesting as these views may appear, considering the time they were published, you will notice that the *rôle* played by the manganese in the process, and the chemical nature of this substance, were not at all understood. The law of multiple proportions had not yet been propounded by John Dalton, and the researches of Berzelius on the oxides of manganese were only published thirteen years later, in 1812. The green gas we are considering was still looked upon as muriatic acid, to which oxygen had been added, in contradistinction to Scheele's view, who considered it as muriatic acid, from which something, viz., phlogiston, had been abstracted.

Davy's Work on Chlorine.

It was Humphry Davy who had, by a series of brilliant investigations, carried out in the laboratory of the Royal Institution between 1808 and 1810, accumulated fact upon fact to prove that the gas hitherto called oxygenated muriatic acid did not contain oxygen. He announced in an historic paper, which he read before the Royal Society on July 12, 1810, his conclusion that this gas was an elementary body, which in muriatic acid was combined with hydrogen, and for which he proposed the name "chlorine," derived from the Greek χλωρός, signifying "green," the colour by which the gas is distinguished.

The numerous communications which Humphry Davy made to the Royal Society on this subject form one of the brightest and most interesting chapters in the history of chemistry. They have recently been reprinted by the Alembic Society, and I cannot too highly recommend their study to the young students of our science.

Those who have followed the history of chemistry I need not remind how hotly and persistently Davy's views were combated by a number of the most eminent chemists of his time, led by Berzelius himself, how long the chlorine controversy divided the chemical world, how triumphantly Davy emerged from it, how completely his views were recognised, and how very instrumental they have been in advancing theoretical chemistry.

The hope, however, which Davy expressed in that same historic paper, "that these new views would perhaps facilitate one of the greatest problems in economical chemistry, the decomposition of the muriates of soda and potash," was not to be realised so soon. Although it had changed its name, chlorine was still for many years manufactured by heating a mixture of salt, manganese, and sulphuric acid in leaden stills, as before.

Chlorine as a Bye-Product.

This process leaves a residue consisting of sulphate of soda and sulphate of manganese, and for some time attempts were made to recover the sulphate of soda from these residues, and to use it for the manufacture of carbonate of soda by the Le Blanc process. On the other hand, the Le Blanc process, which had been discovered and put into practice almost simultaneously with Berthollet's chlorine process, decomposed salt by sulphuric acid, and sent the muriatic acid evolved into the atmosphere, causing a great nuisance to the neighbourhood.

Naturally, therefore, when Mr. William Gossage had succeeded in devising plant for condensing this muriatic acid, the manufacturers of chlorine reverted to the original process of Scheele, and heated manganese with the muriatic acid thus obtained. Since then the manufacture of chlorine has become a bye-product of the manufacture of soda by the Le Blanc process, and remained so till very recently.

For a great many years the muriatic acid was allowed to act upon native ores of manganese in closed vessels of earthenware or stone, to which heat could be applied, either externally or internally. These native manganese ores, containing only a certain amount of peroxide, converted only a certain percentage of the muriatic acid employed into free chlorine, the rest combining with the manganese and iron contained in the ore, and forming a brown and very acid solution, which it was a great difficulty for the manufacturer to get rid of. Consequently, many attempts were made to regenerate peroxide of manganese from these waste liquors, so as to use it over again in the production of chlorine.

These, however, for a long time remained unsuccessful, because the exact conditions for super-oxidising the protoxide of manganese by means of atmospheric air were not yet known.

Dunlop's Work on Chlorine.

Meantime, viz., in 1845, Mr. Dunlop introduced into the works created by his grandfather, Mr. Charles Tennant, at St. Rollox, a new and very interesting method for producing chlorine, which was in a certain measure a return to the process used by the alchemists.

Indeed, the first part of this process consisted in decomposing a mixture of salt and nitre with oil of vitriol—a reaction that had been made use of for so many centuries! The chlorine so obtained is, however, not pure, but a mixture of chlorine with oxides of nitrogen and hydrochloric acid, which Mr. Dunlop had to find means to eliminate.

For separating the nitrous oxides, Mr. Dunlop adopted the method introduced twenty years before by the great Gay-Lussac in connection with vitriol-making, viz., absorption by sulphuric acid, and the nitro-sulphuric acid thus formed he also utilised in the same way as that obtained from the towers which still bear Gay-Lussac's illustrious name, viz., by using it in the vitriol process in lieu of nitric acid. He then freed his chlorine gas from hydrochloric acid by washing with water, and so obtained it pure. This process possessed two distinct advantages: (1) it yielded a very much larger amount of chlorine from the same amount of salt, and (2) the nitric acid, which was used for oxidising the hydrogen in the hydrochloric acid, was not lost, because the oxides of nitrogen to which it was reduced answered the purpose for which the acid itself had previously been employed. But this process was very limited in its application, as it could only be worked to the extent to which nitric acid was used in vitriol-making.

The process has been at work at St. Rollox for over fifty years, and, as far as I know, is there still in operation; but I am not aware that it has ever been taken up elsewhere.

Within the last few years, however, several serious attempts have been made to give to this process a wider scope by regenerating nitric acid from the nitro-sulphuric acid and employing it over and over again to convert hydrochloric acid into chlorine. Quite a number of patents have been taken out for this purpose, all employing atmospheric air for reconverting the nitrous oxides into nitric acid, and differing mainly in details of apparatus and methods of work, and several of these have been put to practical test on a fairly large scale in this neighbourhood, and also in Glasgow, Middlesbrough, and elsewhere. As I do not want to keep you here the whole afternoon, I have to draw the line somewhere as to what I shall include in this brief history of the manufacture of chlorine, and have had to decide to restrict myself to those methods which have actually attained the rank of manufacturing processes on a large scale. As none of the processes just referred to have attained that position, you will excuse me for not entering into further details respecting them.

Mr. Dunlop's process only produced a very small portion of the chlorine manufactured at that time at St. Rollox, the remainder being made, as before, from native manganese and muriatic acid, leaving behind the very offensive waste liquors I have mentioned before, which increased from year to year, and became more and more difficult to get rid of. The problem of recovering from these liquors the manganese in the form of peroxide Mr. Dunlop succeeded in solving in 1855.

He neutralised the free acid and precipitated the iron present by treating these liquors with ground chalk in the cold and settling out, and in later years filter-pressing the precipitate, which left him a solution of chloride of manganese, mixed only with chloride of calcium. This was treated with a fresh quantity of milk of chalk, but this time under pressure in closed vessels provided with agitators and heated by steam, under which conditions all the manganese was precipitated as carbonate of manganese. This precipitate was filtered off and well drained, and was then passed on iron trays mounted on carriages through long chambers, in which it was exposed to hot air at a temperature of 300° C., the process being practically made continuous, one tray at the one end being taken out of these chambers, and a fresh tray being put in at the other end. One passage through these chambers sufficed to convert the carbonate of manganese into peroxide, which was used in place of, and in the same way as, the native manganese.

The whole of the residual liquors made at the large works at St. Rollox have been treated by this process with signal success for a long number of years. For a short time the process was discontinued in favour of the Weldon process (of which I have to speak next), but after two years Dunlop's process was taken up again, and, to the best of my knowledge, it is still in operation to this day. It has, however, just like Mr. Dunlop's first chlorine process never left the place of its birth (St. Rollox), although it was for a period of over ten years without a rival.

Weldon's Patent Process.

In 1866, Mr. Walter Weldon patented a modification of a process proposed by Mr. William Gossage, in 1837, for recovering the manganese that had been used in the manufacture of chlorine. Mr. Gossage had proposed to treat the residual liquors of this manufacture by lime, and to oxidise the resulting protoxide of manganese by bringing it into frequent and intimate contact with atmospheric air. This process—and several modifications thereof subsequently patented—had been tried in various places without success. Mr. Weldon, however, did succeed in obtaining a very satisfactory result, possibly—even probably—because, not being a chemist, he did not add the equivalent quantity of lime to his liquor to precipitate the manganese, but used an excess. However, Mr. Weldon, if he was not a chemist at that time, was a man of genius and of great perseverance. He soon made himself a chemist, and having once got a satisfactory result, he studied every small detail of the reaction with the utmost tenacity until he had thoroughly established how this satisfactory result could be obtained on the largest scale with the greatest regularity and certainty.

He even went further, and added considerably to our theoretical knowledge of the character of manganese peroxide and similar peroxides by putting forward the view that these compounds possess the character of weak acids. He explained in this way the necessity for the presence of an excess of lime or other base if the oxidation of the precipitated protoxide of manganese by means of atmospheric air was to proceed at a sufficiently rapid rate. He pointed out that the product had to be considered as a manganite of calcium, a view which has since been thoroughly proved by the investigations of Goergen and others; and it is only fair to state that Weldon's process is not only a process for recovering the peroxide of manganese originally used, but that he introduced a new substance, viz., manganite of calcium, to be continuously used over and over again in the manufacture of chlorine.

Mr. Weldon had the good fortune that his ideas were taken up with fervency by Colonel Gamble, of St. Helens, and that Colonel Gamble's manager, Mr. F. Bramwell, placed all his experience as a consummate technical chemist and engineer at Mr. Weldon's disposal, and assisted him in carrying his ideas into practice. The result was that a process which many able men had tried in vain to realise for thirty years became in the hands of Mr. Weldon and his coadjutors within a few years one of the greatest successes achieved in manufacturing chemistry.

The Weldon process commences by treating the residual liquor with ground chalk or limestone, thus neutralising the free acid and precipitating any sulphuric acid and oxide of iron present. The

clarified liquor is run into a tall cylindrical vessel, and milk of lime is added in sufficient quantity to precipitate all the manganese in the form of protoxide. An additional quantity of milk of lime, from one-fifth to one-third of the quantity previously used, is then introduced, and air passed through the vessel by means of an air compressor. After a few hours all the manganese is converted into peroxide; the contents of the vessel are then run off; the mud, now everywhere known as "Weldon mud," is settled, and the clear liquor run to waste. The mud is then pumped into large closed stone stills, where it meets with muriatic acid, chlorine is given off, and the residual liquor treated as before.

How Weldon's Process Works.

You note that this process works without any manipulation, merely by the circulation of liquids and thick magmas which are moved by pumping machinery. As compared to older processes it also has the great advantage that it requires very little time for completing the cycle of operations, so that large quantities of chlorine can be produced by a very simple and inexpensive plant. These advantages secured for this process the quite unprecedented success that within a few years it was adopted, with a few isolated exceptions, by every large manufacturer of chlorine in the world; yet it possessed a distinct drawback, viz., that it produced considerably less chlorine from a given quantity of muriatic acid than either native manganese of good quality or Mr. Dunlop's recovered manganese. At that time, however, muriatic acid was produced as a bye-product of the Le Blanc process so largely in excess of what could be utilised that it was generally looked upon as a waste product of no value. Mr. Weldon himself was one of the very few who foresaw that this state of things could not always continue. The ammonia soda process was casting its shadow before it. Patented in 1838 by Messrs. Dyar and Hemming it was only after the lapse of thirty years (during which a number of manufacturing chemists of the highest standing had in vain endeavoured to carry it into practice) that this process was raised to the rank of a manufacturing process through the indomitable perseverance of Mr. Ernest Solvay, of Brussels, and his clear perception of its practical and theoretical intricacies. A few years later, in 1872, Mr. Weldon already gave his attention to the problem of obtaining the chlorine of the salt used in this process in the form of muriatic acid. He proposed to recover the ammonia from the ammonium chloride obtained in this manufacture by magnesia instead of lime, thus obtaining magnesium chloride instead of calcium chloride, and to produce muriatic acid from this magnesium chloride by a process patented by Clemm in 1863, viz., by evaporating the solution, heating the residue in the presence of steam, and condensing the acid vapours given off.

Strange to say, this same method had been patented by Mr. Ernest Solvay within twenty-four hours before Mr. Weldon lodged his specification. It has been frequently tried with many modifications, but has never been found practicable. Soon afterwards Mr. Weldon, with the object of reducing the muriatic acid required by his first process, proposed to replace the lime in this process by magnesia, and so to produce a manganite of magnesia. After treating this with muriatic acid, and liberating chlorine, he proceeded to evaporate the residual liquors to dryness, during which operation all the chlorine they contain would be disengaged as hydrochloric acid and collected in condensers, while the dry residue, after being heated to dull redness in the presence of air, would be reconverted into manganite of magnesia.

This process was made the subject of long and extensive experiments at the works of Messrs. Gamble at St. Helens, but did not realise Mr. Weldon's expectations. It, however, led to some further interesting developments, to which I shall refer later on.

Deacon's Process without Manganese.

Those of you who were present at the last meeting of the British Association in this city will remember that this Section had the advantage of listening to a paper by Mr. Weldon on his chlorine process, and also to another highly interesting paper by Mr. Henry Deacon of Widnes, "on a new chlorine process without manganese." And those of you who came with the then President of the Section (Prof. Roscoe) to Widnes to visit the works of Messrs. Gaskell, Deacon, and Co., will well remember that at these works they saw side by side Weldon's process and Deacon's process in operation, and no one present will have forgotten the thoughtful flashing eyes and impressive face of Mr. Deacon when he explained to his visitors the theoretical views he had formed as regards his process.

Mr. Deacon had made a careful study of thermo-chemistry, which had been greatly developed during the preceding decade by the painstaking, accurate, and comprehensive experiments of Julius Thomsen and of Berthelot, and had led the latter to generalisations, which, although not fully accepted by scientific men, have been of immense service to manufacturing chemistry.

Mr. Deacon came to the conclusion that if a mixture of hydrochloric acid with atmospheric air was heated in the presence of a suitable substance capable of initiating the interaction of these two gases by its affinity to both, it would to a very great extent be converted into chlorine with the simultaneous formation of steam, because the formation of steam from oxygen and hydrogen gives rise to the evolution of a considerably larger quantity of heat than the combination of hydrogen and chlorine. Mr. Deacon found that the salts of copper were a very suitable substance for this purpose, and took out a patent for this process in 1868. He entrusted the study of the theoretical and practical problems connected with this process to Dr. Ferdinand Hurter, who carried them out in a manner which will always remain memorable and will never be surpassed, as an example of the application of scientific methods to manufacturing problems, and which soon placed this beautiful and simple process on a sound basis as a manufacturing operation.

In the ordinary course of manufacture the major part—about two-thirds—of the hydrochloric acid is obtained mixed with air and a certain amount of steam, but otherwise very little contaminated. Instead of condensing the muriatic acid from this mixture of gases by bringing it into contact with water, Mr. Deacon passed it through a long series of cooling pipes to condense the steam, which of course absorbed hydrochloric acid, and formed a certain quantity of strong muriatic acid. The mixture of gases was then passed through an iron superheater to raise it to the required temperature, and thence through a mass of broken bricks impregnated with sulphate or chloride of copper contained in a chamber or cylinder called a decomposer, which was protected from loss of heat by being placed in a brick furnace kept sufficiently hot. In this apparatus from 50 to 60 per cent. of the hydrochloric acid in the mixture of gases was burnt to steam and chlorine. In order to separate this chlorine from the steam and the remaining hydrochloric acid the gases were washed with water, and subsequently with sulphuric acid. The mixture now consisted of nitrogen and oxygen, containing about 10 per cent. of chlorine gas, which could be utilised without any difficulty in the manufacture of bleach liquors and chlorate of potash, and which Mr. Deacon also succeeded in using for th manufacture of bleaching powder, by bringing it into contact in specially-constructed chambers with large surfaces of hydrate of lime. Within recent years this latter object has been attained in a more expeditious and perfect manner by continuous mechanical apparatus (of which those constructed by Mr. Robert Hasenclever and Dr. Carl Langer have been the most successful), in which the hydrate of lime is transported in a continuous stream by single or double conveyors in an opposite direction to the current of dilute chlorine, and the bleaching powder formed delivered direct into casks, thereby avoiding the intensely disagreeable work of packing this offensive substance by hand.

Advantages of the Deacon Process.

Mr. Deacon's beautiful and scientific process thus involves still less movement of materials than the very simple process of Mr. Weldon, because in lieu of large volumes of liquids he only moves a current of gas through his apparatus, which requires a minimum of energy. The only raw material used for converting hydrochloric acid into chlorine is atmospheric air, the cheapest of all at our command. The hydrochloric acid which has not been converted into chlorine by the process is all obtained, dissolved in water, as muriatic acid, and is not lost, as in previous processes, but is still available to be converted into chlorine by other methods, or to be used for other purposes.

In spite of these distinct advantages, this process took a long time before it became adopted as widely as it undoubtedly deserved. This was mainly due to the fact that the economy in the use of muriatic acid which it effected was at the time when the process was brought out, and for many years afterwards, no object to the majority of chlorine manufacturers, who were still producing more of this commodity than they could use. Moreover, there were other reasons. The plant required for this process, although so simple in principle, is very bulky in proportion to the quantity of chlorine produced, and as I have pointed out, the process only succeeded in converting about one-third of the hydrochloric acid produced into chlorine, the remainder being

obtained as muriatic acid, which had in most instances to be converted into chlorine by the Weldon process; so that the Deacon process did not constitute an entirely self-contained method for this manufacture. This defect, of small moment as long as muriatic acid was produced in excessive quantities, was only remedied by an invention of Mr. Robert Hasenclever a short number of years ago; when by the rapid development of the ammonia soda process the previous existing state of things had been completely changed, and when, at least on the Continent, muriatic acid was no longer an abundant and valueless bye-product, but, on the contrary, the alkali produced by the Le Blanc process had become a bye-product of the manufacture of chlorine. Mr. Hasenclever, in order to make the whole of the muriatic acid he produces available for conversion into chlorine by the Deacon process, introduces the liquid muriatic acid in a continuous stream into hot sulphuric acid contained in a series of stone vessels, through which he passes a current of air. He thus obtains a mixture of hydrochloric acid and air, well adapted for the Deacon process, the water of the muriatic acid remaining with the sulphuric acid, from which it is subsequently eliminated by evaporation. In this way the chlorine in the hydrochloric acid can be almost entirely obtained in its free state by the simplest imaginable means, and with the intervention of no other chemical agent than atmospheric air. Since their introduction the Deacon process has supplanted the Weldon process in nearly all the largest chlorine works in France and Germany, and is now also making very rapid progress in this country.

THE WELDON-PECHINEY PROCESS.

Mr. Weldon, when he decided to give up his manganite of magnesia process, by no means relaxed his efforts to work out a chlorine process which should utilise the whole of the muriatic acid. While working with manganite of magnesia he found that magnesia alone would answer the purpose without the presence of the peroxide of manganese. He obtained the assistance of M. Pechiney, of Salindres, and in conjunction with him worked out what has become known as the "Weldon-Pechiney" process, which was first patented in 1884.

This process consists in neutralising muriatic acid by magnesia, concentrating the solution to a point at which it does not yet give off any hydrochloric acid, and then mixing it into a fresh quantity of magnesia so as to obtain a solid oxychloride of magnesium. This is broken up into small pieces, which are heated up rapidly to a high temperature without contact with the heating medium, while a current of air is passing through them. The oxychloride of magnesium containing a large quantity of water, this treatment yields a mixture of chlorine and hydrochloric acid with air and steam, the same as the Deacon process, and this is treated in a very similar way to eliminate the steam and the acid from the chlorine. The acid condensed is, of course, treated with a fresh quantity of magnesia, so that the whole of the chlorine which it contains is gradually obtained in the free state.

The rapid heating to a high temperature of the oxychloride of magnesium without contact with the heating medium was an extremely difficult practical problem, which has been solved by M. Pechiney and his able assistant, M. Boulouvard, in a very ingenious and entirely novel way.

They lined a large wrought-iron box with fire-bricks, and built inside of this vertical fire-brick walls with small empty spaces between them, thus forming a number of very narrow chambers, so arranged that they could all be filled from the top of the box, and emptied from the bottom. These chambers they heated to a very high temperature by passing a gas flame through them, thus storing up in the brick walls enough heat to carry out and complete the decomposition of the magnesium oxychloride, with which the chamber was filled when hot enough.

Mr. Weldon himself called this apparatus a "baker's oven," in which trade certainly the same principle had been employed from time immemorial; but to my knowledge it had never before been used in any chemical industry. This process has been at work at M. Pechiney's large alkali works at Salindres, and is now at work in this country at the chlorate of potash works of Messrs. Allbright and Wilson, at Oldbury, a manufacture for which it offers special advantages. Mr. Weldon and M. Pechiney had expected that this process would become specially useful in connection with the ammonia soda process by preparing in the way proposed by Mr. Solvay and Mr. Weldon in 1872, a solution of magnesium chloride as a bye-product of this manufacture; but instead of obtaining muriatic acid from this solution by Clemm's process, to treat it by the new process, so as to obtain the bulk of the chlorine at once in the free state. But M. Pechiney did no more succeed than his predecessors in recovering the ammonia by means of magnesia in a satisfactory way.

Quite recently, however, it has been applied to obtain chlorine in connection with the ammonia soda process by Dr. Pick, of Czakowa, in Austria. He recovers the ammonia, as usual, by means of lime, and converts the solution of chloride of calcium, obtained by a process patented by Mr. Weldon in 1869, viz., by treatment with magnesia and carbonic acid under pressure, into chloride of magnesium with the formation of carbonate of lime. The magnesium chloride solution is then concentrated and treated by the Weldon-Pechiney process.

CHLORINE IN THE AMMONIA SODA PROCESS.

I have repeatedly referred during this brief history to the great change which has been brought about in the position of chlorine manufacture by the development of the ammonia soda process, and have pointed out that the muriatic acid which for a long time was the bye-product of the Le Blanc process, without value, thereby became gradually its main and most valuable product, while the alkali became its bye-product.

I have told you how, very early in the history of this process, Mr. Solvay and Mr. Weldon proposed means to provide for this contingency, and how Mr. Weldon continued to improve these means until the time of his death. Mr. Solvay, on his part, also followed up the subject with that tenacity and sincerity of purpose which distinguishes him; his endeavours being mainly directed to producing chlorine direct from the chloride of calcium running away from his works by mixing it with clay and passing air through the mixture at very high temperatures, thus producing chlorine and a silicate of calcium, which could be utilised in cement-making. The very high temperatures required prevented, however, this process from becoming a practical success.

I have already told you what a complicated series of operations Dr. Pick has lately resorted to in order to obtain the chlorine from this chloride of calcium. Yet the problem of obtaining chlorine as a bye-product of the ammonia soda process presents itself as a very simple one.

This process produces a precipitate of bicarbonate of soda and a solution of chloride of ammonium by treating natural brine, or an artificially-made solution of salt, in which a certain amount of ammonia has been dissolved, with carbonic acid. In their original patent of 1838, Messrs. Dyar and Hemming proposed to evaporate this solution of ammonium chloride, and to distil the resulting dry product with lime to recover the ammonia. Now, all that seemed to be necessary to obtain the chlorine from this ammonium chloride was to substitute another oxide for lime in the distillation process, which would liberate the ammonia and form a chloride which, on treatment with atmospheric air, would give off its chlorine and reproduce the original oxide. The whole of the reactions for producing carbonate of soda and bleaching powder from salt would thus be reduced to their simplest possible form; the solution of salt, as we obtain it in the form of brine direct from the soil, would be treated with ammonia and carbonic acid to produce bicarbonate, and subsequently monocarbonate, of soda; the limestone used for producing the carbonic acid would yield the lime required for absorbing the chlorine, and produce bleaching powder instead of being run into the rivers in combination with chlorine in the useless form of chloride of calcium; and both the ammonia (used as an intermediary in the production of soda), and the metallic oxide (used as an intermediary in the production of chlorine), would be continously recovered.

The realisation of this fascinating problem has occupied me for a great many years. In the laboratory I obtained soon almost theoretical results. A very large number of oxides and even of salts of weak acids were found to decompose ammonium chloride in the desired way; but the best results (as was to be clearly anticipated from thermo-chemical data) were given by oxide of nickel.

DIFFICULTIES OF THE NEW PROCESS.

When, however, I came to carry this process out on a large scale, I met with the most formidable difficulties, which it took many years to overcome successfully.

The very fact that ammonium chloride vapour forms so readily metallic chlorides when brought in contact at an elevated temperature with metals or oxides, or even silicates, led to the greatest difficulty, viz., that of constructing apparatus which would not be readily destroyed by it.

Amongst the metals we found that platinum and gold were the only ones not attacked at all. Antimony was but little attacked, and nickel resisted very well if not exposed to too high a temperature, so that it could be, and is being, used for such parts of the plant as are not directly exposed to heat. The other parts of the apparatus coming in contact with the ammonium chloride vapour I ultimately succeeded in constructing of cast and wrought iron, lined with fire-bricks or Doulton tiles, the joints between these being made by means of a cement consisting of sulphate of baryta and waterglass.

After means had been devised for preventing the breaking of the joints through the unequal expansion of the iron and the earthenware, the plant so constructed has lasted very well.

Oxide of nickel, which had proved the most suitable material for the process in the laboratory, gave equally good chemical results on the large scale, but occasionally a small quantity of nickel chloride was volatilised through local over-heating, which, however, was sufficient to gradually make up the chlorine conduits. We therefore looked out for an active material free from this objection. Theoretical considerations indicated magnesia as the next best substance, but it was found that the magnesium chloride formed was not anhydrous, but retained a certain amount of the steam formed by the reaction, which gave rise to the formation of a considerable quantity of hydrochloric acid on treatment with hot air. In conjunction with Dr. Eschellman (who carried out the experiments for me), I succeeded in reducing the quantity of this hydrochloric acid to a negligible amount by adding to the magnesia a certain amount of chloride of potassium, which probably has the effect of forming an anhydrous double chloride.

This mixture of magnesia and potassium chloride is, after the addition of a certain quantity of china clay, made into small pills in order to give a free and regular passage throughout their entire mass to the hot air and other gases with which they have to be treated. In order to avoid as far as possible the handling and consequent breaking of these pills, I vaporise the ammonium chloride in a special apparatus, and take the vapours through these pills and subsequently pass hot air through, and then again ammonium chloride vapour, and so on, without the pills changing their place.

VAPORISATION OF THE AMMONIUM CHLORIDE.

The vaporisation of the ammonium chloride is carried out in long cast-iron retorts lined with thin Doulton tiles, and placed almost vertically in a furnace which is kept by producer gas at a very steady and regular temperature. These retorts are kept nearly full with ammonium chloride, so as to have as much active heating surface as possible. From time to time a charge of ammonium chloride is introduced through a hopper at the top of these retorts, which is closed by a nickel plug. The ammonium chloride used is very pure, being crystallised out from its solution as produced in the ammonia soda manufacture by a process patented by Mr. Gustav Jarmay, which consists in lowering the temperature of these solutions considerably below 0° C. by means of refrigerating machinery. The retorts will, therefore, evaporate a very large amount of ammonium chloride before it becomes necessary to take out through a door at their bottom the non-volatile impurities which accumulate in them. The ammonium chloride vapour is taken from these retorts by cast-iron pipes lined with tiles and placed in a brick channel, in which they are kept hot, to prevent the solidification of the vapour, to large upright wrought-iron cylinders which are lined with a considerable thickness of fire-bricks, and are filled with the magnesia pills, which are, from the previous operations, left at a temperature of about 300° C. On its passage through the pills the chlorine in the vapours is completely retained by them, the ammonia and water vapour formed pass on and are taken to a suitable condensing apparatus. The reaction of the ammonium chloride vapour upon magnesia being exo-thermic, the temperature of the pills rises during this operation, and no addition of heat is necessary to complete it. The temperature, however, does not rise sufficiently to satisfactorily complete the second operation, viz., the liberation of the chlorine and the reconversion of the magnesium chloride into magnesium oxide by means of air. This reaction is slightly endo-thermic, and thus absorbs a small amount of heat, which has to be provided in one way or another. I effect this by heating the pills to a somewhat higher temperature than is required for the action of the air upon them, viz., to 600° C., by passing through them a current of a dry inert gas free from oxygen heated by a Siemens-Cowper stove to the required temperature. I use for this purpose the gas leaving the carbonating plant of the ammonia soda process.

This current of gas also carries out of the apparatus the small amount of ammonia which was left in between the pills. It is washed to absorb this ammonia, and after washing, this same gas is passed again through the Siemens-Cowper stove, and thus constantly circulated through the apparatus, taking up the heat from the stove and transferring it to the pills. When these have attained the required temperature, the hot inert gas is stopped and a current of hot air passed through, which has also been heated to 600° C. in a similar stove. The air acts rapidly upon the magnesium chloride, and leaves the apparatus charged with 18 to 20 per cent. of chlorine and a small amount of hydrochloric acid. The chlorine comes gradually down, and when it has reached about 3 per cent. the temperature of the air entering the apparatus is lowered to 350° C. by the admixture of cold air to the hot air from the stove; and the weak chlorine leaving the apparatus is passed through a second stove, in which its temperature is raised again to 600° C., and passed into another cylinder full of pills which are just ready to receive the hot-air current. A series of four cylinders is required to procure the necessary continuity for the process.

The chlorine gas is washed with a strong solution of chloride of calcium, which completely retains all the hydrochloric acid, and is then absorbed in an apparatus invented by Dr. Carl Langer, by hydrate of lime, which is made to pass by a series of interlocked transporting twin-screws in an opposite direction to the current of gas, and produces very good and strong bleaching powder, in spite of the varying strength of the chlorine gas. The hydrochloric acid absorbed by the solution of calcium chloride can, by heating this solution, be readily driven out and collected.

This process has now been in operation on a considerable scale at our Works at Winnington for several years, with constantly improving results, notably with regard to the loss of ammonia, which has gradually been reduced to a small amount. The process has fully attained my object, viz., to enable the ammonia soda process to compete, not only in the production of carbonate of soda, but also in the production of bleaching powder, with the Le Blanc process.

PRODUCTION OF CHLORINE BY ELECTROLYSIS.

Nevertheless, I have hesitated to extend this process as rapidly as I should otherwise have done, because very shortly after I had overcome all its difficulties, entirely different methods from those hitherto employed for the manufacture of chlorine were actively pushed forward in different parts of the globe, for which great advantages were claimed, but the real importance and capabilities of which were and are up to this date very difficult to judge. I refer to the processes for producing chlorine by electrolysis.

During the first decade of this century, Humphry Davy had by innumerable experiments established all the leading facts concerning the decomposing action of an electric current upon chemical compounds. Amongst these he was the first to discover that solutions of alkaline chlorides, when submitted to the action of a current, yield chlorine. His successor at the Royal Institution, Michael Faraday, worked out and proved the fundamental law of electrolysis, known to everybody as "Faraday's Law," which has enabled us to calculate exactly the amount of current required to produce by electrolysis any definite quantity of chlorine. Naturally, since these two eminent men had so clearly shown the way, numerous inventors have endeavoured to work out processes based on these principles for the production of chlorine on a manufacturing scale, but only during the last few years have these met with any measure of success.

It has taken all this time for the classical work of Faraday on electro-magnetism to develop into the modern magneto-electric machine, capable of producing electricity in sufficient quantity to make it available for chemical operations on a large scale; for you must keep in mind that an electric installation sufficient to light a large town will only produce a very moderate quantity of chemicals.

In applying electricity to the production of chlorine, various ways have been followed, both as to the raw materials and as to the apparatus employed. While most inventors have proposed to electrolyse a solution of chloride of sodium, and to produce thereby chlorine and caustic soda, I am not aware that up to this day any quantity of caustic soda made by electrolysis has been put on the market.

Only two electrolytic works producing chlorine on a really large scale are in operation to-day. Both electrolyse chloride of potassium, producing as a bye-product caustic potash, which is of very much higher value than caustic soda, and of which a larger quantity is obtained for the same amount of current expended. These works are situated in the neighbourhood of Stassfurt, the important centre

of the chloride of potassium manufacture. The details of the plant they employ are kept secret, but it is known that they use cells with porous diaphragms of special construction, for which great durability is claimed. There are at this moment a considerable number of smaller works in existence, or in course of erection in various countries, intended to carry into practice the production of chlorine by electrolysis by numerous methods, differing mainly in the details of the cells to be used; but some of them also involving what may be called new principles. The most interesting of these are the processes in which mercury is used alternately as kathode and anode, and salt as electrolyte. They aim at obtaining in the first instance chlorine and an amalgam of sodium, and subsequently converting the latter into caustic soda by contact with water, which certainly has the advantage of producing a very pure solution of caustic soda. Mr. Hamilton Castner has carried out this idea most successfully by a very beautiful decomposing cell, which is divided into various compartments, and so arranged that by slightly rocking the cell the mercury charged with sodium in one compartment passes into another, where it gives up the sodium to water, and then returns to the first compartment, to be recharged with sodium. His process has been at work on a small scale for some time at Oldbury, near Birmingham, and works for carrying it out on a large scale are now being erected on the banks of the Mersey, and also in Germany and America.

Entirely different from the foregoing, but still belonging to our subject, are methods which propose to electrolyse the chlorides of heavy metals (zinc, lead, copper, etc.) obtained in metallurgical operations or specially prepared for the purpose, among which the processes of Dr. Carl Hoepfner deserve special attention. They eliminate from the electrolyte immediately both the products of electrolysis, chlorine on one side and zinc and copper on the other, and thus avoid all secondary reactions, which have been the great difficulty in the electrolysis of alkaline chlorides.

All these processes have, however, still to stand the test of time before a final opinion can be arrived at as to the effect they will have upon the manufacture of chlorine, the history of which we have been following, and this must be my excuse for not going into further details. I have endeavoured to give you a brief history of the past of the manufacture of chlorine, but I will to-day not attempt to deal with its future? Yet I cannot leave my subject without stating the remarkable fact that every one of these processes which I have described to you is still at work to this day, even those of Scheele and Berthollet, all finding a sphere of usefulness under the widely varying conditions under which the manufacture of chlorine is carried on in different parts of the world.

Conclusion.

Let me express a hope that a hundred years hence the same will be said of the processes now emerging and the processes still to spring out of the inventor's mind. Rapid and varied as has been the development of this manufacture, I cannot suppose that its progress is near its end, and that nature has revealed to us all her secrets as to how to procure chlorine with the least expenditure of trouble and energy. I do not believe that industrial chemistry will in future be diverted from this Section and have to wander to Section A under the ægis of applied electricity. I do not believe that the easiest way of effecting chemical changes will ultimately be found in transforming heat and chemical affinity into electricity, tearing up chemical compounds by this powerful medium, and then to recombine their constituents in such form as we may require them. I am sure there is plenty of scope for the manufacturing chemist to solve the problems before him by purely chemical means, of some of which we may as little dream to-day as a few years ago it could have been imagined that nickel would be extracted from its ores by means of carbon-monoxide.

At a meeting of this Association which brings before us an entirely new form of energy, the Röntgen rays, which have enabled us to see through doors and walls and look inside the human body; which brings before us a new form of matter, represented by Argon and Helium, which, as their discoverers, Lord Rayleigh and Prof. Ramsay, have now abundantly proved, are certainly elementary bodies, inasmuch as they cannot be split up further, but are not chemical elements, as they possess no chemical affinity and do not enter into combinations—at a meeting at which such astounding and unexpected secrets of nature are revealed to us, who would call in doubt that, notwithstanding the immense progress pure and applied science have made during this century, new and greater and farther-reaching discoveries are still in store for ages to come?

CORRESPONDENCE.

All Articles, Letters, Notices, and Reports intended for publication in the Journal, Books for Review, and communications respecting Editorial matters generally must be Addressed "Editor, 17, Bloomsbury Square, London," and not in any case to individuals supposed to be connected with the Editorial Staff. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

Any Instructions from Members, Associates, and Students of the Pharmaceutical Society, with reference to the transmission of the Journal, should be sent to the Secretary — Mr. Richard Bremridge,— 17, Bloomsbury Square, London.

Business communications—including advertisements, orders for copies of the Journal, and instructions from Subscribers respecting transmission of same—must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London. Cheques and money orders should be made payable to "Street Brothers."

Correspondents who wish notice to be taken of their communications must write in ink, on one side of the paper only, and should authenticate the matter sent with their names and addresses—of course not necessarily for publication. No notice can be taken of anonymous communications.

Drawings for illustrations should be executed twice the desired size; clean, sharp lines being drawn with a pen and liquid Chinese ink. Shading by washes is inadmissible. Photographs can be utilised in certain cases.

Names and Formulæ should be written with extra care, all systematic names of plants and animals being underlined, and capital letters used to commence generic but not specific names.

Reprints of articles cannot be supplied unless authors communicate with the Editor before publication.

Gelatin Pill-Coater.

Sir,—Referring to a "New Pill-Coater," shown in your issue of 22nd ult., and "D.'s" letter of this week, I would like to ask for what purpose pills that are being coated with gelatin, or capsules, are made to revolve? With the exception of a central pill (or mould) they all revolve round a common centre, the result of which must be a determination of gelatin to that side of the pill (or mould) that is towards the circumference of the holder.

September 14, 1896. F. (58/36).

Non-Delivery of Journal.

Sir,—For the past three weeks I cannot get my Journal without going to the additional expense of writing for it. Until then I received it regularly, now it is the reverse. I have written to 5, Serle Street and also to the Secretary of the Society on the matter, who forwarded me the two back numbers, and now I am still without last week's, "1368." I trust you will please look into this and see it is put right, so that there will be no further trouble in the matter.

Brixton, September 15, 1896. W. Wilson.

*** As is, or ought to be, well known, all communications from Members Associates, and Students of the Pharmaceutical Society, with reference to transmission of the Journal, should be sent to the Secretary, 17, Bloomsbury Square, London, W.C. In cases such as the above, however, the Editor is always obliged to correspondents who notify the facts to him, and thus enable him to investigate the matter properly. So far as can be ascertained in this instance, the printer appears to have been at fault, carelessness having been manifested in storing and distributing the postal wrappers. A similar explanation will probably apply in other cases that have been brought under the Editor's notice. It is hoped that no further trouble may be caused in this direction, but readers should not hesitate to intimate promptly, to the proper quarter, any failure in delivery. [Editor *Pharm. Journ.*]

A Medical Query.

Sir,—A client of mine who had prescribed for her a mixture containing 15 grain doses of bromide of potassium and 15 minims of compound tr. of valerian to be taken thrice daily, which mixture she has been continuing for some months, is now suffering from thickening of the cutis on the outer surfaces of the anterior extremity of the index fingers, as well as a thinning and crimped appearance of the surfaces of the nails generally. Can any of your medical readers say if the continued exhibition of these remedial agents has anything to do with it?

September 22, 1896. X. Y. Z. (59/11).

ANSWERS TO QUERIES.

[*Queries addressed to the "Editorial Department, 17, Bloomsbury Square, W.C.," will be replied to in the Journal as early as possible after receipt, but the Editor cannot undertake to reply to them through the post, nor is it always possible to publish answers the same week. Questions on different subjects should be written on separate slips of paper, each of which should bear the sender's name or initials. Readers requiring working formulæ for special preparations, and intimating their wants to the Editor, will be assisted as far as may be practicable. The word "parts," when used in formulæ, invariably indicates parts by weight. Anonymous queries will be ignored.*]

INJECTION OF MORPHINE.—The matter you refer to is one for the consideration of a medical practitioner, and quite outside our province. [*Reply to* G.W.B.—59/10]

SARG'S "KALODONT."—Messrs. Barclay and Sons, Ltd., 95, Farringdon Street, London, are the sole wholesale agents for this preparation. [*Reply to* J. P.—59/7.]

ANTS IN HOUSES.—You must first ascertain whence the insects proceed, after which you can easily exterminate them by spraying their places of concealment with crude carbolic acid in which a little naphthalin has been dissolved. [*Reply to* J. D.—59/9.]

TOOTHACHE JELLY.—Guaiacol, 1 drachm; eucaine hydrochlorate, 20 grains; gelatin suppository basis, 1 ounce. Eucaine is both safer and more effective than the hydrochlorate of cocaine generally used for this purpose. [*Reply to* "FERRUM."—58/40.]

LIQUID ANNATTO.—You will find the following answer very well:—Flag annatto, 10 parts; pearlashes, 12 parts; water to make 100 parts. Boil for half an hour, keeping up the quantity of water. Possibly your flag annatto was not of good quality; the above method gives a very strong liquid if good annatto be used. [*Reply to* PHARMACEUTIST.—58/44.]

CLEANSING DRINK FOR COWS.—This appears to be an alkaline aqueous extract of ergot. One hundred fluid parts contain 4·2 parts of carbonate of potassium and 8·1 parts of the extractive of ergot. The ergot from which it has been made does not appear to have been of very good quality. Probably you will find the following give you a preparation closely resembling what you send:—Take one pound of ergot and exhaust it with water, as in making the B.P. fluid extract. Evaporate to 30 fluid ounces, dissolve in this 1½ ounce of carbonate of potassium, and make up to 32 fluid ounces. [*Reply to* M.P.S.—58/43.]

READING FOR THE "MAJOR."—You should supplement Vines' 'Botany' by Green's, which covers the same ground in a simpler and more satisfactory manner. After going through Perkin and Kipping's book, get Bernthsen's 'Organic Chemistry.' Ganot's 'Physics' more than covers all the ground, but you will also find it advantageous to work through Woodward's 'Arithmetical Physics,' parts Ia. and IIa. (Simpkin, Marshall and Co., London, 3*s*). Then, in materia medica, take Maisch for your guide, with frequent references to 'Pharmacographia.' For publishers and prices of books recommended see page 230, in the Student's Number of the Journal. [*Reply to* "FERRUM."—58/40.]

BOILING WATER IN PRESCRIPTIONS.—Though the use of boiling water may not appear essential it is often advantageous, as the act of boiling renders the water sterile, and tends to the preservation of the mixture. This was probably the idea in the prescriber's mind in the present instance:—

℞	Acidi Gallici	ʒiss.
	Tr. Opii	ʒiss.
	Ext. Ergotæ Liq.	ʒvj.
	Aq. Bullientis	ad. ℥xii.

M. ft. Mist.

There is more gallic acid ordered than the water will dissolve in the cold, but if you dissolve by the aid of heat it will crystallise out on cooling. After boiling the water, therefore, allow it to cool, then add gradually to the finely-powdered acid in a mortar, and last add the tincture and extract. [*Reply to* A. T. W.—59/14.]

MARKING INK.—Silver nitrate, 2½ ounces; strong solution of ammonia, 7 ounces; powdered gum acacia, 5 ounces; tartaric acid, 1½ ounce; soluble nigrosine, 100 grains; distilled water, to 20 fluid ounces. Dissolve the silver nitrate in the ammonia, add the tartaric acid. Rub down the acacia and aniline black with sufficient water to make a very thick mucilage, then add gradually the silver solution, and finally make up to the specified volume. A very cheap marking ink may be made from aniline black, 120 grains; hydrochloric acid, 2 fluid drachms; methylated spirit, 1 ounce. Dissolve and add to a mixture of 2 fluid ounces of mucilage of acacia and 2 fluid ounces of water. [*Reply to* "FERRUM."—58/40.]

COLORATION IN EYE LOTION.—The red coloration observed on dispensing the prescription—

℞	Sod. Salicyl.	ʒss.
	Ac. Boric.	ʒiss.
	Aq.	ad ℥viii.

Misce.

must be due to a trace of impurity in the salicylate, probably iron. Pure sodium salicylate gives a colourless solution under the circumstances. [*Reply to* "MECHANICAL MIXTURE."—59/13]

DISPENSING DIFFICULTY.—No reader having responded to your request (*ante*, p. 40) for information regarding the correct manner of dispensing the following:—

℞	Ol. Pini Sylvestris	℥ss.
	Lin. Pot. Iod. *c.* Sapone	ad ʒij.

Misce.

we have had it tried in all conceivable ways, but it seems impossible to get a "solid opaque jelly" without taking an unwarrantable liberty with the prescription. At best the product is obtained of a creamy consistence. Truly this is "a hard nut to crack," and it would be interesting to know how the "first-class dispensing house" did it. [*Reply to* "DUBLIN."—59/6.]

MICROSCOPES FOR PHARMACISTS.—For all-round work in the pharmacy, in addition to serving for examination work, you require in a microscope a firm stand, preferably on a solid tripod foot, with short body (6 inch), draw tube, diagonal rack coarse adjustment, efficient fine adjustment actuating the whole body, and double or triple nosepiece. The stage is best plain, with horse-shoe opening and well-fitting sliding bar. Beneath the stage there should be a rackwork centring sub-stage or a universal sub-stage fitting to take an iris diaphragm and condenser. The double mirror should slide on a movable arm. The most generally useful objectives are 2/3 inch, 1/6 inch, and 1/12 inch oil immersion, but the last is not essential unless you intend doing bacteriological work. Finally, you will require two eyepieces and a sub-stage condenser, preferably achromatic. Omitting the 1/12 inch objective, you ought to get this outfit for ten pounds. As you say English makers preferred, state above requirements to C. Baker, 244, High Holborn, W.C.; W. Watson and Sons, 313, High Holborn, W.C.; or James Swift and Son, 81, Tottenham Court Road, W. Any of these makers will give you satisfaction. [*Reply to* COUNTRYMAN.—59/8.]

OBITUARY.

COCKSHOTT.—On September 14, William Cockshott, chemist and druggist, of Bradford, Yorks, aged 80.

KEEVILL.—On September 16, Robert Keevill, pharmaceutical chemist of Bath, aged 56.

BREBBER.—On September 18, George Forbes Brebber, chemist and druggist, of Newbigging, Towie, N.B.

PUBLISHERS' NOTICE.

COVERS FOR BINDING.

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COMMUNICATIONS, LETTERS, ETC., have been received from Messrs. Blythe, Brown, Bullivant, Crook, Currie, Dobson, Evans, Gostling, Govan, Gunn, Haigh, Holloway, Howorth, Lescher, Morgan, Mosley, Mumbray, Parkin, Pendlebury, Reynolds, Rideal, Tayler, Thorp, Westley, Wray.

"THE MONTH."

Malarin. This is the citrate of a condensation product of acetophenone and paraphenetidine, described as a harmless antipyretic in doses of five grammes, and useful in cases of neuralgic headache and toothache; it is insoluble in cold water, and has a slightly acidulous taste.

$$\left.\begin{matrix} C_6H_4{<}^{OC_2H_5}_{NH_2} \\ C_6H_5\,COCH_3 \end{matrix}\right\} = \left\{\begin{matrix} C_6H_4{<}^{OC_2H_5}_{N=C{<}^{CH_3}_{C_6H_5}} \\ H_2O \end{matrix}\right.$$

Acetophenon-phenetidide is prepared by heating equivalent proportions of acetophenon and *p*-phenetidin either alone or with addition of dehydrating agents. It crystallises in yellow needles melting at 88° C., and readily soluble in hot alcohol, ether, or glacial acetic acid.—*Pharm. Zeit.*, xli., 598.

Theobromine. For the determination of this substance in cacao, Eminger first extracts fat by digesting 10 grammes of the finely powdered material with 150 parts of petroleum spirit; the residue is then dried and a weighed portion boiled with 100 C.c. dilute sulphuric acid (3-4 per cent.) in a flask fitted with a reflux condenser for about half an hour, or until the formation of cacao red is completed. The contents of the flask are then turned into a beaker, and while hot exactly neutralised with the previously calculated quantity of baryta, the whole is evaporated to dryness in a basin with some sand, and the residue extracted in a Soxhlet apparatus, with 150 parts of chloroform for five hours, the chloroform then distilled off, and the residue dried at 100°C. This residue is then washed with not more than 100 C.c. carbon tetrachloride, which dissolves fat and caffeine: the theobromine being quite insoluble in carbon tetrachloride at 18° C., is collected on a filter, dissolved in boiling water, the solution filtered, evaporated, and the residue weighed. By this method the theobromine in different kinds of cacao was found to vary from 1·05 to 2 34 per cent., and the caffeine from 0·05 to 0·36 per cent. Theobromine is soluble in 736·5 parts water at 18° C., 136 parts at 100° C.; in 818 parts boiling absolute alcohol, 21,000 parts ether at 17° C., 2710 parts boiling chloroform, and 5808 parts at 18° C. Theobromine begins to sublime at 220° C. without melting, while caffeine sublimes at 180°, and begins to melt at 220°. By warming theobromine with alkalies, earthy or hydrated lead oxide, for any length of time, it is more or less decomposed.—*Forschungs Berichte*, 1896, 275.

Assay of Kola. In order to extract the whole of the alkaloids theobromine and caffeine, Carles finds it is essential that the powder should be very fine, nothing coarser than a 120 powder giving up the whole of its alkaloids. The presence of a certain amount of moisture is also requisite for complete exhaustion. The following is the method he recommends:—10 grammes of the fine powder are mixed intimately with 1 gramme of slaked lime and 20 grammes of alcohol (80 per cent. by volume). This is dried on the water bath with occasional agitation until the mass weighs 14 grammes; it is then rubbed down in a mortar and introduced into a small flask fitted with a long glass tube condenser and mixed with 35 C.c. of a menstruum composed of 100 grammes of chloroform and 20 grammes of alcohol (93 to 94 per cent. by volume). This mixture is digested on a water bath for one hour, filtered, the residue extracted in a similar manner three times more with 35, 30, and 25 C.c. of the menstruum respectively. The bulked filtrates are evaporated to dryness, and the residue is treated with 10 C.c. of boiling water acidulated with 4 or 5 drops of 1 per cent. sulphuric acid, then with 6 C.c. of boiling water, and lastly with 5 C.c. These aqueous extracts are mixed, evaporated to dryness, and weighed. The weight multiplied by ten gives the percentage of theobromine and caffeine in the nuts. When it is simply needed to determine the "kolanine" or the combination of alkaloids with kola-tannic acid, the powder is first exhausted with cold water, which removes the free caffeine, and then extracted with alcohol (70 per cent. by volume), which dissolves the kolanine. This alcoholic solution is evaporated to an extract, treated with cold water, which leaves the crude kolanine insoluble, it is then dried and weighed. To determine the richness of this kolanine in alkaloids, 1 gramme of it is triturated with a gramme of slaked lime and a few grammes of alcohol (70 per cent. by volume), 3 grammes of chalk are added, and the whole dried until it weighs 6 grammes. This residue is then treated with chloroform-alcohol mixture as described above for the nuts.—*Annales de Chim. Analyt.*, i., 345.

Glutamine, $C_5H_{10}N_2O_3$. This substance is a homologue of asparagine, $C_4H_8N_2O_3$, and was first isolated by Schulze and Boshard (*Berichte*, xvi., 312) from beetroot juice in 1883. Subsequently it was obtained from the shoots of *Cucurbita pepo* and *Helianthus annuus*, and from the tubers of *Stachys tuberifera*. Glutamine crystallises in colourless needles: it is anhydrous, slightly soluble in cold water, readily soluble in hot water, and insoluble in alcohol. By heating with alkalies or baryta water glutamine is decomposed with evolution of ammonia, and is converted into glutamic acid, $C_5H_9NO_4$: its constitution is probably analogous to that of asparagin—

$C_3H_5(NH_2){<}^{CO{\cdot}NH_2}_{COOH}$ Glutamine. $\qquad$ $C_2H_3(NH_2){<}^{CO\,NH_2}_{COOH}$ Asparagine.

As a result of further investigation, E. Schulze (*Berichte*, xxix., 1882) has found that glutamine is very widely distributed, and probably plays the same part as asparagine, which it appears to replace in some instances. The method of extraction consists in first purifying the plant juice by means of basic lead acetate, then precipitating with mercuric nitrate. The precipitate, containing a mercury compound of glutamine, is decomposed with sulphuretted hydrogen, and the clear filtered liquid evaporated until it crystallises. Sometimes the glutamine thus obtained is accompanied by asparagine, tyrosine, or arginine. From tyrosine it may be separated by its greater solubility in water; arginine may be precipitated by phosphotungstic acid; while the crystals of asparagine, being more compact, can be mechanically separated from the lighter needles of glutamine. Glutamine has been found in many of the Cruciferæ and Caryophyllaceæ, in ferns, and in the shoots of *Picea excelsa*. A number of other plants are being examined by Schulze in the Agricultural Laboratory at Zurich.

Digitoxin. By treating the alcoholic extract of digitalis leaves with ether, Kiliani on a former occasion obtained a crystalline glucoside, which presented the same characters as the digitoxin described by Schmiedeberg, and he provisionally gave it the name of β-digitoxin.* Further examination of digitoxin, prepared according to Schmiedeberg's method, has shown that it is a glucoside, and really the same substance as Kiliani obtained in his experiments. The distinctive prefix is therefore no longer necessary. By treating digitoxin with an alcoholic solution of hydrochloric acid without heating above 25° C., it dissolves after four or six hours, and on adding some water, crystals of digitoxigenin are deposited; after leaving the mixture for several hours and filtering, the liquid is shaken with chloroform, which is separated and distilled; the syrupy residue washed with proof spirit into a basin, warmed to drive off chloroform, when

* *Pharm. Journ.*, lv., 120.

more digitoxigenin will be deposited. The watery liquid separated from the chloroform is shaken with sufficient silver oxide to remove hydrochloric acid, filtered and evaporated in a vacuum to syrupy consistence. After some time crystalline crusts are formed, which are dried upon clay slabs, and when dissolved in the least quantity of methyl alcohol form, on addition of ether, fine prismatic crystals of digitoxose, melting at 101° C. Taking the composition of digitoxose to be $C_9H_{18}O_6$, and that of digitoxigenin to be $C_{22}H_{32}O_4$, that of digitoxin would be $C_{31}H_{50}O_{10}$, which agrees with the analytical data obtained. The substance described by Arnaud* as "digitaline crystallisee," and melting at 243° to 245° C., had the same composition, and Kiliani considers that it was probably digitoxin. For the settlement of these and other points further investigation is requisite. In order to ascertain whether the seed of digitalis contains digitoxin, a considerable quantity was extracted with ether: the oil thus extracted did not give any indication of the presence of digitoxin, nor was this substance obtained on treating the residual seed with alcohol and shaking the alcoholic extract with ether. The crystals so obtained consisted of digitogenin, of which the seed appears to contain a comparatively large amount.—*Archiv der Pharmacie*, 234, 481.

Lucium, a New Element. P. Barrière appears to have discovered a new elementary body, which he terms "lucium," in the course of researches on monazite sand. It is proposed to use this supposed new element for the production of an incandescent gas-light. According to Schützenberger, Cleve, Fresenius, and Lecoq de Boisbaudran, lucium dissolves in sulphuric, nitric, and acetic acids, forming white or slightly rose-tinted salts, all of which are soluble in water, forming limpid, colourless solutions. These salts do not form insoluble double salts with sodium sulphate, as do the salts of cerium, lanthanum, and didymium, nor with potassium sulphate, as is the case with thorium and zirconium. Sodium thiosulphate precipitates lucium chloride but not yttrium, ytterbium, or erbium, whilst lucium differs from glucinum by its salts being precipitable by oxalic acid. The atomic weight of lucium is calculated as =104, and its spectral rays are special, only approximating slightly to those of erbium.—*Chem. News*, lxxiv., 159.

Action of Light on Alcohols. A. Richardson and E. C. Fortey show that amyl alcohol palmitic, and stearic acids suspended in water, and acid solutions of some alkaloids yield a very noticeable quantity of hydrogen peroxide on exposure to sunlight in presence of oxygen. Ether, phenol, and oxalic acid have already been shown to do the same. In the experiments on amyl alcohol it was found that absence of moisture did not affect the result, and that valerianic acid was formed, thus seeming to indicate that the change occurring was one of comparatively simple nature not involving the breaking down of the molecule. Carbon dioxide was entirely absent, and the only difference in the products formed from those yielded when other oxidising agents are used, seems to be that hydrogen peroxide is formed instead of water, as in the case of oxalic acid, ether, and other organic substances, thus:—

$$2C_5H_{11}\cdot OH + 3O_2 = 2C_4H_9\cdot COOH + 2H_2O_2.$$

Methyl alcohol treated in a similar manner to the amyl alcohol gave no trace of hydrogen peroxide; ethyl alcohol seemed to show the presence of a trace at the end of a few weeks, but was entirely free from it later; *n*-propyl, isopropyl, and isobutyl alcohols also gave negative results. Octyl alcohol, on the other hand, gave a distinct indication of hydrogen peroxide after an exposure of two weeks.—*Journ. Chem. Soc.*, lxix., 1349.

* *Compt. rend.*, 109, pp. 679, 701.

Guaiacetin. A product obtained by substituting the carboxyl group for hydrogen in the methyl group of guaiacol, is described as useful in tuberculosis; the dose is 8 grains several times daily.—*Pharm. Centrh.*, xxxvii., 654.

Amyloform. By the action of formic aldehyde upon starch Professor Claassen has obtained a product which is described as an inodorous white powder, insoluble in any menstruum, and having a very marked antiseptic character. Under the microscope it does not show any structure of starch. When heated to 110° C. it loses 2·87 per cent. water without being decomposed, so that when applied to surgical dressings they can be sterilised without risk of alteration. It has been found useful as a dressing for wounds and preferable to iodoform.—*Pharmaceutische Zeitung*, xli., 615.

Chemical Inactivity of Röntgen Rays. H. B. Dixon and H. B. Baker have investigated the effect of *x*-rays on some chemical actions, but with only negative results. No combination, either explosive or gradual, occurred when the effect of the rays was tried on mixtures of (1) carbon monoxide and oxygen (dried and moist); (2) hydrogen and oxygen; (3) carbon monoxide and chlorine; (4) hydrogen and chlorine; (5) hydrogen sulphide and sulphur dioxide (dried). In the case of the dried mixture of carbon monoxide and oxygen, sparks were passed through the mixture while it was exposed to the Röntgen rays, and though each spark produced slight combination in its path, no difference could be detected in its action when the rays were falling on the mixture and when they were not. Similarly, no difference could be detected in the rate of combination of carbon monoxide and chlorine as effected by light when the Röntgen rays were present. Sodium sulphite solution exposed to the rays showed no greater absorption of oxygen than a similar solution which was protected; hydrogen peroxide was unaffected, and the glowing of two pieces of phosphorus, one of which was exposed to the rays and the other shielded by a thick piece of platinum, showed no perceptible difference. Electrolytic experiments also yielded negative results.—*Journ. Chem. Soc.*, lxix., 1308.

Spectrum Sensitiveness of a Silver Salt. Captain Abney raises the question why a sensitive salt is sensitive to more than merely monochromatic light. The principle involved is that where there is absorption of light by a body, there work of some kind must be performed. If a slab of silver bromide be placed before the slit of a spectroscope the light it absorbs corresponds with the photographic action that takes place on a bromide plate, and it may be taken as axiomatic that when light acts on silver bromide one atom of bromine is thrown out of the molecule by the light itself, the only way in which this can be done being by the waves of light increasing the swing of the atom as it vibrates in the molecule. It is usually considered that well-timed blows, *i.e.*, given at a fixed interval of time, are necessary to increase the swing of a body, but in the case of the atom of bromine which is swung out there is an almost infinite number of waves of different periods which will affect it. Thus, from the yellow to ultra-violet there is a whole octave of waves which affect silver bromide. What is usually accepted as a necessity, therefore, is apparently not so, the explanation being that it only requires a certain amplitude to cause the atom to swing beyond the sphere of molecular attraction, and if this is attained any further increase in motion is superfluous, so far as that atom is concerned. It is quite possible, as proved by pendulum experiments, to give such an increase in motion or swing by waves that are not absolutely in time with the swin , and eventually periods of vibration arrive

which are so different that the atom can never be ejected, and here there is no sensitiveness so-called. Absorption indicates the same thing in a similar manner, so absorption and sensitiveness go hand in hand. This is a view that seems broadly to account for atomic motion answering to such a large part of the spectrum, and it may be enlarged in various directions to account for the increase in sensitiveness in a higher temperature of the silver salt, as well as the sluggishness of the response to feeble light and also to very intense light.—*Photo. Journ.*, xx., 325.

Laccase and Tyrosinase. G Bertrand finds that laccase and tyrosinase may exist simultaneously in species of *Russula*. Thus, *Russula delica*, Fries., after maceration with chloroform water and pressure yielded a mucilaginous liquid from which a precipitate was thrown down by alcohol. The filtrate, after concentration by distillation in a vacuum, oxidised hydroquinone and pyrogallol with great energy, but was without action on tyrosin, the action of alcohol and the heat employed having destroyed the tyrosinase present. The precipitate, however, retained the oxidising properties of the primitive juice and, though after purification and solution in water it did not affect hydroquinone or pyrogallol, it caused rapid oxidation of tyrosin. It seems possible, therefore, to extract from certain fungi a liquid very rich in laccase but without action on tyrosin and, on the other hand, to obtain from the same plants a solution practically free from the ferment, but manifesting the effects of tyrosinase.—*Comp. rend.*, cxxiii., 463.

Oxidation of Naphthols. E. Bourquelot has continued his investigation of the properties of the soluble ferment found to exist in certain fungi (see *Ph. J.* [3], xxiv., 263), and now publishes the results of experiments with compounds insoluble in water. Ortho-, meta-, and para-xylenol are all oxidised by the ferment, as are also thymol and carvacrol, whilst the two naphthols are affected in a manner that may serve to distinguish them—*a*-naphthol giving a violet coloration and *b*-naphthol a white precipitate which dissolves in ether to form a yellow solution.—*Comp. rend.*, cxxiii., 423.

Boric Acid in Milk. E. H. Farrington finds that the presence of boric acid in milk increases the acidity of that fluid in a curious manner. On dissolving 0·5 Gm. of boric acid in 500 C.c. of water, it was found that 20 C.c. of the resulting solution required 1 C.c. of one-tenth normal alkali to produce a pink colour with phenolphthalein. When the acid was dissolved in milk, however, in the same proportion, 20 C.c. required the addition of 8 C.c. of the same alkaline solution to produce the pink colour. The water was neutral before the addition of acid, whilst 20 C.c. of the plain milk gave the pink colour with 4 C.c. of the one-tenth normal alkali. In other words, the same amount of boric acid increased the acidity of a given sample of milk four times as much as it did the acidity of the water. No explanation of this fact is offered by the author, but he points out that a simple means is thus afforded of detecting boric acid in milk. The acidity of the prepared milk examined represented 0·36 per cent. of lactic acid, and it is considered that milk which apparently contains over three-tenths per cent. of lactic acid, and yet neither tastes nor smells sour, may safely be regarded as adulterated with some preservative, probably boric acid.—*Journ. Am. Chem. Soc.*, xviii., 847.

Unfermented Wine. Professor Müller, of Torgau, in Switzerland, has applied the principle of Pasteur's treatment of wine for the preservation of grape juice and other fruit juices without fermentation. He finds that when the freshly expressed juice is heated in bottles to a temperature of from 60° to 70° C. for fifteen minutes the yeast cells and other fermenting agents are rendered inactive. The juice can then be kept in well-closed bottles for several years without fermenting. To obtain the juice clear it must, however, be filtered, an operation which is easily carried out, as the heating will have coagulated the mucilaginous substances causing turbidity. Filtration may be carried out immediately after heating the juice, or after some time, but in any case the filtered juice must be again heated in bottles to the same temperature originally applied, and then it will keep clear in well-closed bottles for several years. Some grape juice bottled in this manner in 1882 is still sound and unfermented. A Swiss company has been formed to manufacture unfermented grape and fruit juices in this way during the present autumn, and it is expected that the products will meet with a large demand among advocates of temperance and as agreeable dietetic beverages for invalids.—*Apotheker Zeitung*, xi., 724.

Argon in Combination. P. Villard claims to have combined water with argon to form a crystalline hydrate analogous to those formed by other gases. The gas being subjected to a pressure of about one hundred and fifty atmospheres, in presence of water at 0° C., it sufficed to cool a portion of the tube to cause crystallisation locally. It is stated that nitrogen, oxygen, and air can be combined with water in a similar manner, though greater pressure is required.—*Comp. rend.*, cxxiii., 377.

Argon in Fire-Damp. M. Schlœsing, jun., has proved the existence of argon in fire-damp and in the gas evolved in the mines of Rochabelle. Though it has not of necessity been derived from the air, its source is as yet unknown. Possibly reserves of the new element may exist in the depths of the earth, capable of diffusing into the gas around them. Already Bouchard and Troost have found it along with helium in the mineral waters of Cauterets, whilst Ch. Moureu has found it, similarly accompanied, in the waters of Maizières (*Comp. rend.*, cxxi., 819). Argon seems thus to be as generally diffused in the subterranean regions as it is in the atmosphere, and it is suggested that from this point of view determinations of argon in gases escaping from the earth may yield facts of great interest.—*Comp. rend.*, cxxiii., 302.

Formaldehyde in Ointments. F. Lester finds that formaldehyde makes an excellent preservative for ointments. A pound of lard was heated just sufficiently to soften well, and two drachms of formaldehyde was then stirred thoroughly into it. After cooling the lard was placed on a shelf where it was exposed to summer temperature, but after keeping for some time it showed not the slightest trace of rancidity, appearing as fresh as when first treated. Ointment of zinc oxide similarly prepared gave equally satisfactory results, whereas benzoated lard carefully prepared at the same time and kept under identical conditions soon went distinctly rancid. The objection that formaldehyde is a strong reducing agent is met by the suggestion that this need not be considered, having regard to the small proportion necessary.—*Western Druggist*, xviii., 345.

Ancient Copper Workings. M. Berthelot made a most interesting communication to the Paris Academy of Sciences at a recent meeting, his subject being the ancient copper mines of Sinai. These—the most ancient copper workings in history—have been explored of late, with the result that it has become possible to give a connected account of the methods of extraction that were employed three thousand years ago. The Egyptians worked the mines from the time of the third dynasty (about 5000 B.C.), until the poorness of the ore obtained led to their abandonment

Turquoises containing 3 32 per cent. of copper oxide, and sandstone containing copper carbonate and hydrosilicate, were the sources of the metal. The galleries of the mines were found to contain the remains of furnaces, crucibles, etc., and fusion of the minerals appears to have been effected with wood, iron oxide, and calcium carbonate in sandstone furnaces. The fragments of slags and scoriæ discovered possess the same characteristics as those formed in modern smelting works, and the method of extraction seems to have closely resembled that now employed in the case of similar ores.—*Comp. rend.*, cxxiii., 365.

Electric Arc in the Laboratory. M. S. Walker expatiates upon the practical use in the chemical laboratory of the electric arc obtained from a low potential alternating current. He says it can be employed with advantage to show the effect of high temperatures upon difficultly fusible and non-volatile substances, for reduction of metallic oxides, as a partial substitute for the blowpipe in qualitative analysis, and for the synthesis of certain compounds of carbon from their elements. The apparatus is arranged by fastening a cored carbon, about 10 by 1 Cm., in a vertical position so that the lower end is about 10 Cm. from the top of the table. Connect by wrapping with insulated copper wire, stripped where contact is made with the carbon, then bore a conical-shaped cavity, 4 or 5 Mm. deep, in one end of another piece of cored carbon, 4 by 1 Cm., fix this in a wooden clamp, and connect it with insulated wire as before. Connect all the wires so that the circuit will be completed if the carbons touch. The lower carbon is of course stationary, but the movements of the shorter piece can be controlled like a test-tube in a holder. The rheostat is adjusted so that an arc 1/16 to 1/8 inch long can pass between the lower end of the longer carbon, and the edge of the conical cavity in the smaller one, and most minerals and common metals fuse easily when a small piece is placed in the cavity. It is stated that there is practical freedom from danger when working with a 50-volt alternating current, if the apparatus is properly fixed, and that the inconvenience caused by occasional shocks is found to be less than that due to burns, etc., accidentally caused during ordinary laboratory practice.—*Amer. Chem. Journ.*, xviii., No. 4.

Botany of Venezuela. Professor H. H. Rusby states that the most conspicuous of the tree families in the Lower Orinoco district are the Lecythidaceæ, Sapotaceæ, Meliaceæ, Leguminosæ, Palmæ, Apocynaceæ, and Laurineæ. The Melastomaceæ found during his recent expedition were few and small, while Compositæ of all kinds were apparently scarcer than in any other region he has yet visited. The Leguminosæ and Bignoniaceæ are the most conspicuously represented families of climbing and twining plants, and probably the most numerous also, while the Malpighiaceæ and Passifloraceæ are well represented. Soft woods suitable for building purposes are abundant, as are also hard woods of elegant texture and high polish. About five hundred species of plants were collected, the aim kept in view being to obtain thirty-two specimens of each, in order to supply correspondents, including most of the leading universities in the United States and Europe. Six hundred pounds of drying paper was kept constantly employed during the fifty-one days available for collecting, and the amount of work involved can be better imagined than described. Other specimens collected include thirty sections of tree trunks, several hundred pounds of a Laurinaceous wood which is rich in an apparently valuable but unknown essential oil, various Balata gums, several species and forms of *Cephaelis* and *Smilax*, a number of plants yielding native remedies, and a large collection of milky-juiced plants. Finally, a form of *Erythroxylon* was found, similar to one previously collected by Prof. Rusby at the junction of the rivers Beni and Madre de Dios, thousands of miles further south-west. If, as seems probable, this is a forest form of the coca plant escaped for many generations from cultivation, it must represent a very ancient cultivation of the plant at the mouth of the Orinoco, as it occurred quite wild in the forest, and could by no possibility have made its way from the distant Andes by the transportation of seeds upon the river current. The Professor's English friends will be pleased to know of the great success of his Orinoco exploration, and will hope for great results when sufficient time has elapsed to allow of his specimens being fully examined.—*Alumni Journal*, iii., 185.

Robinia Nicou. This plant is used in French Guiana as a fish poison. Mons. E. Geoffroy, who examined it (*Annales de l'Institut Coloniale de Marseille*, 1895, pp. 8–86, pl. i.–xi.), found that its properties are due to a crystalline substance, which he has named "nicouline." It is neutral to test paper, has the formula C_3H_4O, a melting point of 162°, and is not a glucoside. It dissolves in alkaline solutions, and is precipitated from them unaltered by acids, is soluble in less than its own weight of chloroform, and in about three times its weight of benzol, but is only slightly soluble in water. Its physiological action shows that it is an excitant of the spinal cord, of which it exaggerates the reflex action. Death appears to result from paralysis of the respiratory centres.

Guava. The leaves of this plant have been examined by M. Khouri, who finds that their astringent properties are due to psiditannique and gallic acids, which, together with the essential oil contained in the leaves, accounts for their use as a remedy in diarrhœa and dysentery, and in dyspepsia.—*Ann. de l'Institut Coloniale de Marseille*, pp. 81, 154.

Sangol. A root used by the natives in Senegal and the French Soudan, under the name of "sangol," has been examined by Messrs. Heckel and Schlagdenhauffen (*Annales de l'Institut Coloniale de Marseille*, pp. 51–76). It is referred by them to *Cocculus leœba*, G. P., et Rich., is used in periodic fevers, and is very similar to *Pareira brava*, both in appearance and properties. The authors have found in it about 2 per cent. of pelosine and about 3 per cent. of a new crystalline alkaloid, to which they have given the name of "sangoline," which melts at 188°, and in alcoholic or chloroformic solution rotates the plane of polarisation to the right. It is thrown down by water from its alcoholic solution, and does not give the colour reaction that is obtainable with sulphuric acid and an oxidising agent from pelosine. The root also contains columbin. The plant is also mentioned by Dymock ('Materia Medica of W. India' [2], p. 33) as a common scandent shrub in the Punjaub, Scinde, Persia, Afghanistan, and Arabia, and is used as a febrifuge, but it is omitted from the 'Pharmacographia Indica.' In Watt's 'Dict. Econ. Prod. India,' ii., p. 397, it is said, on the authority of Murray, to be used as a partial substitute for hops in the manufacture of Indian beer.

New Gutta-percha Trees. Four new sources of gutta-percha are described by Professor Engler in the *Notizblatt des Konigl. Bot. Gart. und Mus. zu Berlin*, No. 3, p. 101. They are natives of King Wilhelm's Land, where the following names are applied to the product:—Getah Sussu (*Palaquium susu*, Engl.), which is considered the best kind; Getah Maran (*Payena banun*, Scheff.); Getah Natu (*Payena mentgelii*, K. Sch.), and Getah Nalu (*Sideroxylon kaernbachianum*, Engl.). It is stated that the milky juice of 1, 3, and 4 is white, whilst the cotyledons of No. 2 turn red on exposure to the air. It may therefore be supposed that the product turns reddish like the Getah Taban Merah of the Malays.

LESSONS IN PHYSICO-CHEMISTRY.

LATENT AND SPECIFIC HEATS.

Quantity and Degree of Temperature.

In proceeding to the consideration of latent heat and specific heat, it is essential that the difference between quantity of heat and degree of temperature should be clearly understood. The latter is what is measured by a thermometer of any kind, and may be regarded as an expression of the intensity of heat in a given body; but if it is required to know, for instance, how much heat has been imparted to a body in a certain operation, other factors must be considered besides the temperature at which it was before the operation and the temperature to which it has been raised. Thus it is clear that the mass of the body will play an important part, and that a greater quantity of heat will be required to raise the temperature of, say, 10 lbs. of water from 0° to 15° than to raise that of 1 lb. from 0° to 15°. It may further readily be supposed that more heat is required to raise the temperature of 10 lbs. of water from 0° to 10° than of 1 lb. from 0° to 15°. It is not so readily apparent, however, that more heat is necessary to raise the temperature of 10 lbs. of water from 0° to 15° than to raise that of 10 lbs. of mercury also from 0° to 15°, but such is the case. This is not due to the fact that the volume occupied by the mercury is less than the volume of the water, for if 10 lbs. of alcohol are heated from 0° to 15°, the quantity of heat needed will still be less than in the case of water, though the alcohol occupies the greater volume. The real cause of the difference lies in the nature of the substances heated, and the amount of heat necessary to raise a fixed weight of a substance through a given range of temperature is always the same so long as the conditions of working remain the same; if unit weight of the substance is heated through unit range of temperature (1°), the quantity of heat required, expressed in thermal units, is called the *specific heat capacity*, or more commonly the *specific heat*, of that substance.

We have here made use of the term "thermal unit." The thermal unit generally in use is the calorie, which is defined as the quantity of heat necessary to raise the temperature of one gramme of water from 0° to 1° C. In practice, however, the quantity of heat necessary to raise the temperature of one gramme of water one degree at the ordinary temperature (about 16° C., or within a few degrees of it) is very commonly taken as the calorie, and this is not quite the same as the theoretical calorie as defined above, but equals about ·993 times as much. This difference in the unit is of no consequence for many purposes, but in very exact measurements the true calorie must be used. Other units that are in use are the respective amounts of heat necessary to raise the temperature of one pound avoirdupois and one kilogramme of water from 0° to 1°, and of one gramme from 0° to 100°. So long as the same unit is employed throughout a series of measurements, and is clearly stated, it does not much matter which is taken.

Another illustration of the difference between temperature and quantity of heat may be found in observing what takes place when a solid or liquid is heated. We have already said in connection with the determination of melting points that if heat is regularly supplied to a solid substance its temperature rises up to a certain point, at which it begins to assume the liquid state, and that it undergoes no further rise in temperature as long as this change is going on, but if the heating is still continued after melting is complete, the temperature of the substance again rises. Let it be supposed, however, that the heating is stopped as soon as melting is complete; the liquid is now at the same temperature as the solid was at the instant when it began to melt, the mass of it is precisely the same, and it is the same chemical substance; yet it must contain more heat than the solid did, for heat has been supplied to it during the whole time it was melting. Similarly with a liquid at its boiling point; if heat is supplied to it until it is all converted into vapour, the temperature of the vapour will be the same as that of the liquid was, and their mass and chemical nature are identical, yet the vapour must contain more heat.

In these two cases the energy that was supplied in the form of heat and that has produced the observed changes of state has merely assumed another form. It is by virtue of this energy that the molecules have greater freedom of movement, or keep at greater average distances from one another, these changes appearing respectively as the assumption of the liquid or the gaseous state. But we may fairly say that heat has disappeared, and if by any means we induce the reverse change of state, heat will re-appear in amount exactly equal to that which disappeared before. The heat that was so used up is accordingly said to have been latent, and the number of heat units that are required to melt unit mass of a substance without raising its temperature is said to be the *latent heat of liquefaction* of that body, and the number of heat units necessary to vaporise unit weight of the liquid is called the *latent heat of vaporisation*.

These two latent heats are also termed respectively the "heat of fusion" and "heat of vaporisation." In addition, they are often indifferently called simply "latent heat," and it is then understood that the change referred to is that by which the substance arrived at its present condition, with absorption of heat. Thus if the latent heat of a liquid is spoken of, the heat of fusion of the substance is intended; similarly, the latent heat of a vapour means the heat of vaporisation of the substance in question.

Determination of Latent Heat.

The latent heat of any body is a quite characteristic property, and has always the same value for any definite substance, if the conditions under which it is determined are the same. Hence, the determination of latent, as well as of specific heats, is a matter of some importance. It will be evident from what has been said that to ascertain either we shall require some means of measuring quantity of heat. The apparatus that is used for this purpose is called a calorimeter.

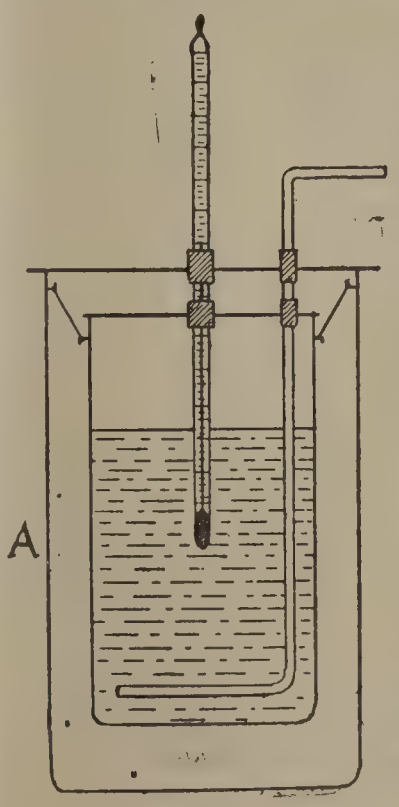


Fig. 10.

In the calorimeter, quantity of heat is measured in a perfectly direct manner. We have defined the practical unit quantity as the amount necessary to raise the temperature of unit mass (one gramme) of water one degree. If the heat to be measured can be entirely transferred to water, and the mass of the water and the number of degrees through which its temperature is raised are known, by multiplying these two together we at once find the number of calories. A calorimeter consists essentially of a vessel holding a known mass of water of known temperature; into this is put the substance whose specific heat, for instance, is to be found, previously heated to a known point above the temperature of the water, and when it has

parted with its excess of heat to the water the temperature of the latter is again ascertained.

Fig. 10 represents diagrammatically a section of a calorimeter of the usual form. The inner cylindrical vessel A contains the water, which must be pure, and should be freed from dissolved gases by previous boiling and cooling out of contact with the air; the quantity of water should not be less than half a litre. The vessel A is made of copper or nickel, brightly polished on the outside to reduce the radiation of heat to a minmum. It is covered with a lid of the same material, in which there are two holes, and is suspended by silk threads inside a second metal vessel, which is well polished both inside and out. A fairly wide space containing only air is left between the vessels; instead of the inner one being hung by silk it may rest on cones of wood or other non-conducting material on the bottom of the outer one. The latter is also closed with a lid, through which two holes pass. The apparatus, as here represented, may be surrounded with cotton wool in a third vessel to prevent the temperature of the calorimeter being influenced by slight draughts or changes in the temperature of the air; or it may be suspended in an air-space surrounded by a large water bath to fulfil the same purpose.

Through one hole in each of the lids the thermometer passes; this must have a very fine bore, and should be graduated in tenths or hundredths of a degree. Through the other two holes the handle of the stirrer passes; the actual stirring part is a piece of perforated metal, fitting pretty closely in the cylinder, with a hole cut for the thermometer, and it is moved vertically to mix the contents of the vessel.

If a hot body is now put into the calorimeter, the heat given out by it will not be entirely absorbed by the water, but some will also go to the vessel, the thermometer, and the stirrer. It is therefore necessary to find the "water-equivalent" of these, that is, the weight of water that will require the same amount of heat to raise its temperature through any given interval as is required by these three together. This is best done as follows:—The calorimeter is weighed, the inner vessel then nearly filled with water, and the whole weighed again, this giving the weight of water taken; the temperature of this water is very accurately read. Some more water is now heated in a vessel, from the bottom of which projects a tube closed with a stop-cock, and its temperature is accurately read by a thermometer immersed in it. A little is then run out by the tube and rejected, and immediately after a suitable quantity is run into the inner vessel of the calorimeter, the lids having been momentarily raised. The contents of the latter vessel are thoroughly mixed by means of the stirrer, and the thermometer is watched; it will rise rather quickly, then become stationary, and after a while slowly sink again. The highest reading is the required one; by subtracting this from the temperature of the water that was added, we find through what range the latter has been cooled, and the weight of it is found by again weighing the calorimeter and contents, and deducting the previous weight. Multiplying the number of grammes by the number of degrees (of course including fractions) we obtain the number of calories given out by the hotter water.

By multiplying the number of grammes of water originally in the calorimeter by the number of degrees through which its temperature has been raised, we find the number of calories absorbed by the water; the difference between this number and the number of calories given out is the number that have been absorbed by the apparatus. Dividing this number again by the number of degrees through which the apparatus (in common with the water) was heated, we get lastly the number of grammes of water that would have taken up the same amount of heat, and in all future calculations we add this weight to the weight of water taken and ignore the apparatus.

By way of example the following may be supposed to be the data found by experiment:—

(*a*) Weight of apparatus	175·5	grammes.
(*b*) „ „ and water, before experiment	685·5	„
(*c*) Weight of apparatus and water, after experiment	804 7	„
(*d*) Temperature of water in calorimeter, before experiment	15°·23	
(*e*) Temperature of water added	25°·52	
(*f*) Temperature of water in calorimeter, after experiment	17°·11	

From these data we obtain:—

Weight of water added = (*c*) − (*b*) = 119·2 grammes.

Range of temperature through which it was cooled = (*e*) − (*f*) = 8°·41.

Heat given out by it = 119·2 × 8·41 = 1002·47 cal.

Weight of water originally in calorimeter = (*b*) − (*a*) = 510 grammes.

Range of temperature through which it was heated = (*f*) − (*d*) = 1°·88.

Heat absorbed by it = 510 × 1 88 = 958·80 cal.

Heat absorbed by apparatus = 1002·47 − 958 80 = 43·67 cal.

Lastly, since this number of calories has been absorbed by the apparatus in rising 1°·88 in temperature, we have for the heat absorbed by it in rising $1° \frac{43·67}{1·88} = 23·2$ cal., and this amount of heat would be absorbed by 23 2 grammes of water in rising 1°, hence water equivalent of calorimeter, stirrer, and thermometer together = 23·2 grammes.

Determination of Specific Heat.

For the determination of the specific heat of an unknown solid body, the process is exactly similar to that just described, except that instead of adding a certain quantity of heated water to the contents of the calorimeter the body in question previously heated to a known temperature is added. For the purpose of heating, the body is enclosed in a chamber that can be heated by a current of vapour of the required temperature, and the bottom of which is movable, so that the body can be dropped directly into the calorimeter without loss of heat. Liquids may be enclosed in a small metal or glass flask, which must be filled and closed, and treated in the same way as a solid; the specific heat of the material of the flask and its weight must be known, so that the heat given up by it can be calculated. The experiment having been performed, the weight of water in the calorimeter, plus the water equivalent of the latter, multiplied into the observed rise of temperature, gives the number of calories taken up, all of which heat has been given out by the known weight of the substance under experiment, in cooling through a range of temperature which is observed as above. From this we can at once calculate how many calories are given out by 1 gramme of the substance cooling 1°, and this is exactly equal to the number that are required to heat 1 gramme of it through 1°, that is, to the specific heat.

In the case of a liquid of which a considerable quantity is available, it is better to replace the water in the calorimeter by the liquid and add a hot substance whose specific heat is known. Here the calculation is the reverse of that in the last case. We know the weight and specific heat of the hot body, and the range of temperature through which it has cooled, and hence the number of calories it has given out. We know how many calories are taken up by the apparatus; the remainder have been taken up by the known weight of the liquid we are dealing with in rising through a known number of degrees, hence its specific heat is at once found.

Even when the calorimeter is surrounded by cotton-wool or by an air space and a water bath, there will always be some exchange of heat between it and its surroundings. The error that would arise from this cause is mostly corrected in the determination of the water equivalent of the apparatus, if the initial and final temperatures and the length of time occupied are so arranged as to be as nearly as possible the same as in the actual experiment. Also the temperature of the apparatus and contents at the beginning of the experiment should be as much below the temperature of the air as it will be above it at the close. The correction may be made still more accurately by observing the rates of cooling at various temperatures and calculating from these data.

To find the specific heat of a gas, the apparatus described above must, of course, be modified, but the principle of the process is the same. A known quantity of the heated gas at known temperature and pressure is slowly led through a long tube coiled in the calorimeter, and there becomes cooled to the temperature of the latter, and the heat evolved is calculated from the usual data. Determinations of this kind are not often to be made, and further details need not be given here.

(*To be continued.*)

PHARMACOPŒIA REVISION.

American Suggestions.

The Committee of the American Pharmaceutical Association on the revision of the United States Pharmacopœia submitted the following report at the Montreal meeting:—

Oleum Anisi.—Since anethol, a definite chemical compound, is conceded to be the active principle of this oil, it should either be substituted for the oil or a certain percentage of anethol should be required, and the oil should be valued by its content of anethol. Further, a method of determining the content of anethol should be devised.

Oleum Cinnamomi.—Cinnamic aldehyde is the active principle of this oil, and should either be substituted for it or a standard requirement and method of assay for cinnamic aldehyde agreed upon.

Oleum Gaultheriæ.—Methyl salicylate is the active principle of this oil, and should be substituted in the Pharmacopœia, as the synthetic methyl salicylate is being generally used in place of the natural oil, and is better than the latter, as it is a pure and uniform product, and not a complex mixture of varying composition.

Oleum Limonis.—Citral gives this oil its value, and should either be substituted for it or a citral requirement and method of assay be set up.

Oleum Betulæ Volatile should be dropped, since it is practically identical with, and has been practically superseded by, methyl salicylate.

Oleum Bergamottæ.—Linalool gives this oil its characteristic odour, and a linalool standard requirement would be of value to determine the value of the oil.

Oleum Myrciæ.—The pure oil distilled from bay leaves (*Myrcia acris*) does not meet the U.S.P. requirement of sp. gr. and solubility, and manufacturers of this oil are compelled to adulterate the same with eugenol to make their ol. myrciæ actually a U.S.P. article, while they sell the pure oil of bay under their own name, and naturally at higher prices, making the U.S.P. article an inferior article. The requirement should be so altered that pure oil of bay can be labelled U.S.P., as it should be.

Oleum Sassafras.—If safral is the odoriferous principle of this oil, it should be substituted for it, or a safral requirement and method of assay established.

Hyoscine Hydrobro s.—It has been maintained that scopolamine is identical with hyoscine, and some manufacturers have substituted the name scopolamine hydrobromas for hyoscine hydrobromas. In order to avoid confusion and possible danger, it is desirable to have this matter investigated and decided by the Committee.

Physostigma.—The active principle is physostigmine, an alkaloid. As this drug is used quite extensively, it is desirable to devise a method of assay and establish a standard requirement for the drug.

Codeinæ Sulphas and Codeinæ Phosphas should be made official, as they are being very generally used, and their use is increasing at a steady rate.

Cola Acuminata.—Kola nut is being used to such a large extent now, and is a valuable drug inasmuch as it contains considerable caffeine, a valuable remedy, that it appears desirable to make it official and establish a caffeine requirement and method of assay.

Saw Palmetto Berries (*Sabal serrulata*) are being used in large quantities now, and the use appears to be steadily increasing. It would be well to make it official, since it appears to possess therapeutic value.

Extractum Senegæ Fluidum.—An acetic extract is desirable.

Extractum Scillæ Fluidum.—An acetic extract is desirable, and investigation as to best process requested. The object of this desired investigation is for the purpose of changing the present formula for syr. scillæ compos., which is not satisfactory.

Adeps Benzoinatus.—The U.S.P. directs that white wax be added during the summer months. This should be changed to stearic acid.

Spiritus Frumenti and Spiritus Vini Gallici should be dismissed from the Pharmacopœia.

Vinum Album and Vinum Rubrum should be dismissed from the U.S. Pharmacopœia.

The Medicated Wines of the U.S.P. should be dismissed and replaced by vinegars.

Dismiss all tinctures having a fluid extract of the same drug official, and all fluid extracts having a tincture of the same drug official; substitute for such tinctures and fluid extracts a 50 per cent. extract under a distinctive title.

Tinctura Opii Deodorati.—The process of the U.S.P. is both wasteful and tedious. The following modification is suggested:—

Granulated Opium.....	100 Gm.
Deodorised Gasoline, 87°.....	*q.s.*
Alcohol	200 C.c.
Water	A sufficient quantity.

Macerate the opium with 400 C.c. gasoline, shaking occasionally for twenty-four hours, decant, and add 200 C.c. gasoline, macerate, shaking occasionally for twenty-four hours more, then place on filter. When liquid has ceased dropping, add gradually 200 C.c. more gasoline, and, when liquid has all passed through filter, dry the opium, using a gentle heat if necessary. Now macerate the opium in 300 C.c. of water (warm) for twenty-four hours, place in percolator, and when liquid has ceased to drop continue percolation with warm water to obtain 800 C.c., to this add the alcohol, and filter. Sample of deod. tincture of opium (not assayed) made after above process hereby submitted.

Linum, Sinapis Alba, Sinapis Nigra, entirely free from other seeds, are difficult to obtain in the market, and the standard should be changed, giving a maximum percentage of foreign matter allowed.

Powdered Acacia and Cambogia are frequently met with showing traces of starch. Such contamination, being either through presence of small quantities of foreign matter in the crude substance, or caused by adhesion of such matter in the mill where

ground; a change should be made in their standard limiting amount allowable.

It is stated that cane sugar syrups, especially many of the medicinal syrups, gradually undergo inversion on standing, and that these syrups will in many cases disturb the digestion of those who are obliged to take them for any length of time. We recommend investigation of this subject as well as of the utility of using glycerin in place of cane sugar syrup.

Pulvis Nucis et Opii.—There has been some complaint that the formula of 1890 does not yield the same therapeutic effect as the formula of 1880, and many pharmacists are obliged to use both the 1880 and 1890 formula on that account. Investigation is suggested.

Tinct. Nucis Vom.—The formula of 1890 is not satisfactory. The tincture deposits extractive matter, and does not yield the clear product of the formula of 1880, and does not otherwise present any advantage over the formula of 1880. We suggest a return to the formula of 1880, retaining the standard of content of alkaloids at present formula.

Tr. Catechu Compos.—This tincture should either be made by maceration or some porous insoluble substance mixed with the drugs to facilitate percolation.

PHARMACY AND MEDICINE AS PROFESSIONS.*

Pharmacy is a department of medical science, and its practice is a medical art. Being dependent upon therapeutics, it is in close relation with the practice of the physician, and dependent thereon. This fact must not be lost sight of, because it is necessary to have the co-operation of the medical profession in securing the passage of laws which shall properly regulate the practice of pharmacy.

Medicine is one of the so-called learned and liberal professions, and therefore pharmacy must also be regarded in the same light, and its practice must conform to the demands of science and be compatible with the interests of medical practice as a whole. Let us consider, therefore, briefly what these requirements are.

From time immemorial the medical profession has been founded upon the beneficent ideal which requires the physician to publish the knowledge of his discoveries for the benefit of science, of his profession and of suffering humanity. Pharmacy must be practised with the same liberal spirit, otherwise the interests of the two professions can never be amalgamated. Again, the physician who would restrain the knowledge of a valuable medicinal discovery for money-making purposes would soon lose caste, not only with his profession, but with the public at large.

Original investigation in the domain of drugs, and preparations of the same and its publication, is necessary for progress in the science and art of pharmacy. On it depends our colleges of pharmacy, our pharmacopœias, text-books, pharmaceutical and medical press. All methods which lock up knowledge to trade secrecy are therefore inimical to pharmacy, and in legislating, the fact must always be borne in mind. There is constant conflict going on between trade and science, which is recognised by the United States Patent Laws, which are devised for the purpose of protecting science on the one hand, and trade on the other. The recognition of this conflict is a very important matter in all attempts to legislate on behalf of pharmacy. Further reference to the Patent Laws will be made later on in this report.

Every pharmacist should, as far as possible, select and prepare drugs for dispensing. On his skill in so doing depends in part his reputation and standing as a professional man. Schemes of proprietorship and monopoly devised to prevent the pharmacist from exercising his prerogative are fit subjects for consideration.

It is for the interest of the public that a class of the community should be educated and trained, and set apart for the important vocation of preparing and dispensing poisons, and all medicines virtually belong to the class of toxic substances. It is apparent, therefore, that the pharmaceutical profession should be specially protected by pharmacy laws which restrain others from entering the field without like qualification.

The reason why the pharmacist has a right to demand special class legislation in the form of pharmacy laws is because of the peculiar nature of his vocation, which prevents him from taking advantage of many so-called business methods, considered legitimate in trade. Therefore, in competition with merchants engaged in like occupation, viz., in manufacturing and selling medicines, he does not possess an equal chance in making a livelihood. As it is for the interests of the public that he should not resort to the ordinary methods of advertising, which create a fictitious demand for medicines and cause people to unduly dose themselves with drugs of all kinds, it is likewise of interest to the public that laws should be passed which will permit the pharmacist to obtain a competence in the practice of his vocation in a professional manner. Only by so doing will the better class of the community be attracted to the profession as a vocation and the interests of the public served by competent men.

That pharmacy is degenerating into a trade is apparent when the editor of one of our leading pharmaceutical journals says in a recent editorial: "Times and conditions of things have changed and are still rapidly changing, and the pharmacist must change with them. Every day he becomes less of a professional man and more of a merchant, and unless he learns the ways of a merchant, he must become and remain a mendicant, beseeching men of stronger mould for help to gain a precarious and uncertain livelihood among the ruins of his former profession. Men go into business not for philanthropy or amusement, but to make money. A desire for gain and to rise in the world are the inducements, and the . . . . . druggist is no exception to this rule. If the retailer has at last caught this idea and spirit, his salvation is assured."

Various plans of relief from the unfair methods of trade competition with the proprietary medicine houses, department stores, etc., have been proposed, and your Committee believes that the only method of relief consists in the recognition of pharmacy as a liberal profession, its practice in a professional manner, and its protection as a special class of the community, such protection being for the true interest of the public at large.

* Extract from Report of the Committee on National Legislation of the American Pharmaceutical Association.

Formic Aldehyde in the Treatment of Ringworm.—Having found that pure cultures of both forms of *Trichophyton* quickly succumb to even the vapours of formic aldehyde, and that no subsequent growth was ever obtained from infested hairs which had been dipped in the 40 per cent. solution for five minutes, Dr. Salter was induced to try the local application of the remedy in the out-patient department of Guy's Hospital. Forty cases were operated on, the strong solution being applied with a brush or mop for ten minutes, the treatment being repeated every other day on four occasions and then discontinued. Only five cases required the method to be repeated; in the rest the fungus was completely eradicated. The application causes irritation and discomfort for a brief period, but does not vesicate the scalp; it produces, however, a thick crust, to remove which an emollient should be employed. A remarkable complication was noticed, in a few cases œdema of the face was noted some hours after the painting. In one case this was so marked as to prevent vision from swelling of the eyelids; there was no pain, redness, or constitutional disturbance, and it quickly passed off.—*B. M. J.*, 2, 96, 651.

PHARMACEUTICAL SOCIETY.

MAJOR EXAMINATION PAPERS.

SEPTEMBER 24 AND 25, 1896.

[TIME ALLOWED FOR EACH PAPER—THREE HOURS.]

BOTANY AND MATERIA MEDICA.

1. Describe the changes which may take place in cell membranes after the cell has reached its maximum dimensions.

2. Give some account of the gaseous interchanges in the life of a green plant in which carbon is involved. State what is the importance to the plant of each process you mention.

3. Give as complete an account as possible of the Natural Order Labiatæ. What are the orders most nearly allied to it? How would you discriminate between the orders mentioned in your answer?

4. Whence is oil of anise derived? Describe fully its botanical source, and give some account of its chemical composition. How would you detect whether a given sample had been adulterated?

5. What histological features or micro-chemical reactions would enable you to identify the following?—

Bark of *Rhamnus purshianus.* | Leaf of *Cassia acutifolia.*
" *Salix alba.* | " *Digitalis purpurea.*
Seeds of *Strophanthus.*

PRACTICAL BOTANY AND MATERIA MEDICA.

1. Refer the plant A to its Natural Order, and describe the structure of its gynœcium.

2. Cut a transverse and a longitudinal section of B. Mount them in glycerin, and leave not more than two for inspection by the examiners. Leave lettered sketches explaining your preparations. To what class of plants does the specimen belong?

3. Identify the specimen of bark provided, and display its histological peculiarities. Leave a section and a lettered sketch explaining it.

4. Investigate and report on the powder C.

CHEMISTRY.

[*Six questions only to be attempted.*]

1. What do you understand by the term *acid?* Indicate how the relative "strength" of different acids has been ascertained.

2. How has the heat of formation of carbonic oxide been determined? Calculate the evolution or absorption of heat in the decomposition of steam by metallic magnesium. [Heat of formation of MgO = 144 larger calories, and heat of formation of steam = 58·0 larger calories.]

3. ·255 grm. of the barium salt of an acid yielded on precipitation with sulphuric acid ·233 grm. $BaSO_4$, find the molecular weight of the acid on the assumption that the acid in question is monobasic. [Atom. wt. of Ba = 137.]

4. Given a supply of chlorine gas, indicate how you would propose to obtain the several oxides and oxyacids of this element.

5. How is lead obtained from galena, and how can the several oxides of lead be prepared from the metal?

6. Give three methods by which urea can be artificially prepared, and describe three different reactions into which this substance enters.

7. Given methyl alcohol and potassium ferrocyanide, show how the following substances could be prepared:—Methyl cyanide, methyl isocyanide, methyl cyanate, methyl isocyanate, and methyl thiocyanate.

8. What is *antipyrin*, and how is it prepared?

9. Indicate the relationship between malic, succinic, fumaric, and maleic acids, and show how the last three acids may respectively be obtained from the first.

PHYSICS.

[*Six questions only to be attempted.*]

1. What is meant by "the law of the conservation of energy"?

2. Describe experimental proofs of the pressure of the atmosphere. What measurements are affected by variation of atmospheric pressure?

3. What is meant by specific heat? Describe exactly how you would determine the specific heat of a mass of platinum.

4. How is light propagated? How may it be proved that light travels in straight lines?

5. Describe what happens when a beam of white light passes through a prism?

6. Describe the use, construction, and action of an achromatic lens.

7. Give an account of two forms of voltaic battery, explaining the chemical changes which take place within the cells.

8. How are electric currents measured?

9. Describe some operations you have yourself performed involving the process of distillation, giving sketches of the apparatus used.

REVIEWS AND NOTICES OF BOOKS.

FOOD IN HEALTH AND DISEASE. By I. BURNEY YEO, M.D., F.R.C.P., with illustrations. New and revised edition. Pp. 592. Price 10*s.* 6*d.* London: Cassell and Company, Limited. 1896.

A sufficient supply of suitable food being one of the most indispensable conditions of existence, some acquaintance with the phenomena of nutrition and the principles upon which the value of various articles of diet depends cannot be otherwise than useful to everyone. From that point of view the admirable little treatise originally published by Dr. Burney Yeo seven years ago has already served as a trustworthy source of information, and the fact that the first edition has been several times reprinted is a proof that the book has been very generally appreciated. In the new edition, now issued, the plan and arrangement of the work have not been altered, and the object of making it practically useful has been adhered to. The subject is treated of under the two aspects of health and disease. In the first part a brief description is given of the nature, origin, and purpose of food, the changes it undergoes in the animal body, and the nutritive value of different classes of food. The following chapters contain more detailed accounts of the composition of different animal and vegetable food materials beverages, and condiments, the processes of digestion and assimilation, the preparation of food by cooking, and the means by which articles of food can be preserved—so as to prevent or retard the alteration to which they are liable when kept for any length of time—and thus admit of their being stored up for future use or transported from sources where they are obtainable in abundance to places where the demand is more considerable. The remaining chapters of the first part contain an exposition of the scientific basis of dietaries, with numerous illustrations of the practice adopted in prisons, the army, navy, and schools, while a special chapter is devoted to the subject of infant feeding, and another to a consideration of the relative advantages of animal and vegetable foods. On this subject an opinion is expressed that the abundant sources of nutritious and agreeable food to be found in vegetable products, are now too much neglected; if they could be turned to account, a great advance would be made in domestic economy. But while recognising the possibility of utilising much vegetable food which is now wasted—partly in consequence of want of knowledge of proper methods of cooking and partly by reason of the abundant supply of animal food—Dr. Burney Yeo is no supporter of the views of vegetarians. In the first place, he shows that their practice is inconsistent with the principles they advocate, since they do not adopt an exclusively vegetable diet, but mix with it the more highly nutritive forms of animal food, such as eggs, milk, butter, cheese, etc. There is moreover, every reason to regard man as destined to be a mixed feeder by his organisation and by the varying circumstances in which he is placed; he can exist, when necessary, on either animal or vegetable food, but in those parts of the world where he reaches the highest degree of development, civilisation and culture, it is the invariable practice to take a portion of his food from the animal and a portion from the vegetable kingdom.

In the second part of the work dealing with the subject of Food in Disease, it is pointed out that while the importance of dietetics in the treatment of disease has been universally recognised in almost every period of the history of medicine, at no period has the therapeutic influence of food been so carefully studied as at the present day. With the aid of more complete knowledge of the processes of digestion and metabolism, of the composition of alimentary materials and of their applicability for the purposes of nutrition and support of life, the modern physician is much better enabled to exercise a judicious discrimination in regulating the dietary of

his patients, or in making suitable provision for repairing the excessive tissue waste accompanying certain forms of disease, without over-taxing the enfeebled digestive and assimilative functions. In the first ten chapters of this part of the work the methods of feeding to be adopted for different forms of acute and chronic disease are described, with copious references to the experience of medical authorities and explanatory statements of the scientific principles on which those methods are based. These chapters, abounding in practical directions for the selection and preparation of diet under various conditions, will be of great utility to medical practitioners, as they are fully representative of modern knowledge. The last two chapters of the book give descriptions of the various "cure" systems which are chiefly popular in Germany, and of the means by which alimentation may be effected by the use of artificial digestive agents or predigested food. In regard to an objection which has been raised against the use of peptonised or predigested foods, that they usurp the gastric and duodenal functions and thus tend to demoralise the healthy stomach, the author's comment is that such an objection may be compared to objecting to crutches on the ground of their being demoralising to those who are not lame. The answer to such an objection is that predigested food is not intended for the normal stomach, but to supply what is defective in the abnormal stomach. A useful summary of hospital dietaries is given in an appendix, with a description of various methods of sterilising milk and a number of selected recipes for the preparation of food for invalids. Altogether the work abounds with useful information on the subject of food which cannot fail to be of interest to the general reader, and of great practical utility to medical practitioners, nurses, and others who have to provide for the requirements of invalids.

Die gerichtlich-chemische Ermittelung von Giften in Nahrungsmitteln, Luftgemischen, Speiseresten, Körpertheilen, Etc. By George Dragendorff, Ph.D., M.D., Emeritus Professor at the University of Dorpat. Fourth edition, revised. Pp. 532. Price 12*s*. Göttingen: Vandenhœck and Ruprecht, 1895.

The object of this work is to furnish descriptions of the various methods adopted for the detection of poisons, and to point out their advantages or defects, as well as the extent to which they may be relied upon for practical purposes. The reputation the author has acquired as an authority in this branch of chemical analysis affords good reason for regarding the work as a useful and, to some extent, indispensable guide in the conduct of toxological investigations. It deals with the subject in a very comprehensive manner, and by giving copious references to original memoirs, it serves as a convenient key to all the more important work that has been done in relation to particular poisons. The introductory chapter gives a *résumé* of the general principles upon which a toxicological investigation is to be conducted, laying particular stress upon the necessity of preventing any possible source of erroneous results due to impurity of the chemical reagents employed. In the classification of the subject matter, the halogen elementary substances and the stronger acids, inorganic and organic, are first treated of; then follow gaseous poisons; next a rather miscellaneous group, comprising phosphorus and its compounds, chloroform, alcohols, carbon bisulphide, hydrocarbons of coal tar and petroleum, nitrobenzene, the phenols and substances belonging to the class of volatile oils. The next section includes alkaloids, glucosides and bitter substances which admit of separation by means of immiscible solvents, and the last section, compounds of the various metals. Under the special subheads of these sections the methods of extracting the individual poisons from articles of food, the contents of the stomach or parts of the body, etc., are described, together with the tests by which identification is to be established.

In the case of alkaloids considerable prominence is given to colour tests as means of identification, but however characteristic these reactions may be when the absolutely pure substances are operated upon, there is great danger that when alkaloids have been obtained in such minute quantity that their purification can scarcely be attempted, colour tests will be so confused and indefinite as to furnish no satisfactory evidence. The same may be said of the effects produced by various specific reagents, such as Mayer's, Frohde's, etc. In some respects the statements relating to alkaloids may be objected to; thus, for instance, the amount of caffeine in tea and coffee is given as respectively 3 per cent. and 2 per cent., although it has been shown that tea often contains more than 4 per cent., while in coffee the caffeine seldom varies much from 1·5 per cent. Again, cupreine is described as being soluble in water, though its most notable characteristic of being readily soluble in caustic alkali is not mentioned. The description of emetine is also quite out of date, and while the substance referred to is now known to be a mixture of two perfectly distinct substances, having in many respects very opposite characters, the total amount of alkaloid present in ipecacuanha has never been found so high as 3 per cent., but is rarely more than 2. These errors are, however, of minor importance from a toxological point of view, and in most respects Professor Dragendorff's work will be found a very useful and trustworthy source of information for those who have occasion to undertake the responsible duty of testing for poisons under the difficult conditions usually attaching to such an inquiry.

COMPLIMENT TO MR. MICHAEL CARTEIGHE.

The following letter has been received by Mr. Michael Carteighe during the vacation, and we have great pleasure in giving publicity to the sentiments expressed:—

Pharmacy Board, Victoria.

Melbourne, July 25, 1896.

Dear Sir,—Upon your retirement from the position of President of the Pharmaceutical Society of Great Britain after fourteen years of conspicuous and distinguished service, the Pharmacy Board of Victoria desire to offer its most sincere and hearty congratulations on the important work you have carried out in the interest of pharmacy during your term of office.

The commanding influence which you have exercised on the progress of pharmaceutical education, and your courage and industry in the interest of the Pharmaceutical Society of Great Britain has rendered your name a household word in all English-speaking communities, and the Board, as the representative of pharmacy in the Colony of Victoria, wish that for many years your name may continue to add lustre to pharmacy.

The congratulations which we now offer express the unanimous feelings of the pharmacists of Victoria.

With great respect,

We have the honour to be

Yours faithfully,

C. R. Blackett, *President*,

Harry Shillingham, *Registrar*

Michael Carteighe, Esq.,

17, Bloomsbury Square,

London, W.C.

PHARMACEUTICAL JOURNAL.

A Weekly Record of Pharmacy and Allied Sciences.

ESTABLISHED 1841.

Circulating in the United Kingdom, France, Germany, Austria, Italy, Russia, Switzerland, Canada, the United States, South America, India, Australasia, South Africa, etc.

Editorial Office: 17, BLOOMSBURY SQUARE, W.C.

Publishing and Advertising Office: 5, SERLE STREET, W.C.

LONDON: SATURDAY, OCTOBER 3, 1896.

THE RELATIONS BETWEEN PHARMACY AND SCIENCE IN GERMANY.

As an illustration of the more sympathetic relation between the cultivators of science and persons engaged in the practical exercise of technical arts, attention may be called to the fact that the annual meeting of scientific men in Germany, corresponding to that of the British Association, was held last week at Frankfurt-on-the-Main, and that in conformity with the practice of recent years, one of the sections was devoted to the subjects of pharmacy and pharmacognosy. The sittings of this Section were therefore analogous to those of the British Pharmaceutical Conference, and being held as part of a more extended scientific gathering additional inducement to attend them was offered. The opening meeting was attended by about fifty pharmacists, medical men, and professors, several of them coming from considerable distances. The proceedings were opened by an address from the President of the Section Apotheker Engelhard of Frankfurt, in the course of which some suggestions were made to carry out the arrangements for future meetings of the section through the aid of the officials connected with the German Apotheker Verein. Then followed an address by Professor Tschirch, of Bern, giving a general summary of the results obtained from the investigation of resins recently carried out by himself and by several of his pupils. The inquiry has now been extended to copal, dammar, sandarac, dragon's blood, asafœtida, galbanum, ammoniacum, sagapenum, opoponax, acaroid, benzoin, tolu and Peruvian balsams, styrax, amber, and gutta-percha. As constituents of all these resins, substances having the character of esters and resinoid acids were isolated together with others of an indifferent nature, as to the chemical classification of which there is still some uncertainty. Only a few resins contain representatives of all three groups, and, in most instances, a member of one or other of them preponderates, so that the natural resins may be, to some extent, classified according to their analogies in that respect. Another circumstance which admits of the classification of the esters present in natural resins is the occurrence—as a constituent of the aromatic esters found in the several resins—of either benzoic acid or cinnamic acid, or derivatives of those acids. Thus, for instance, Peruvian balsam, tolu balsam, and Siam benzoin contain esters of benzoic acid, dragon's blood an ester of benzoylacetic acid, ammoniacum an ester of salicylic acid, while styrax, Sumatra benzoin, and yellow acaroid contain esters of cinnamic acid, red acaroid an ester of *p*-cumaric acid, asafœtida an ester of ferulic acid, galbanum and sagapenum esters of umbellic acid, or its anhydride umbelliferone. The only member of the fat acids hitherto met with is succinic acid in amber. The resinoid alcohols present in the esters are also separable into two groups—resinols which are colourless and do not give a tannin reaction—and resinotannols which are coloured and have a tannin reaction. The apparently intimate mutual relations of these bodies have yet to be investigated. The resinoid acids are chiefly oxyacids, corresponding to abietic and pimaric acid, and in many instances they are closely related. The remaining group of resin constituents are remarkable for their resistance to chemical agents, and have not yet been studied sufficiently to determine their nature, though there is some reason for regarding them as compounds belonging to the aromatic series.

At the second meeting of the Section Professor Kunz Krause, of Lausanne, dealt with the chemistry of the tannins, and some of the reactions by which tannins may be distinguished more fully than by the iron reaction. A reaction of this kind, viz., the production of hydrocyanic acid in the presence of nitrous acid, was mentioned as being characteristic of certain kinds of tannin and also of other unsaturated compounds, as well as albumin. In a paper read by Professor Vulpius on the preservation of several pharmaceutical preparations liable to alteration, the keeping of ether and chloroform in small bottles was recommended as a most effectual means of preventing alteration. The experience gained as to the ointment base recommended by Miehle—a mixture of hard and soft paraffin with woolfat—was spoken of by Professor Vulpius as not being in all cases satisfactory, as, for instance, in making red oxide of mercury ointment or ointments containing potassium iodide.

Dr. v. Oefele read a very interesting paper on the state of pharmacy before the time of Hippocrates, in which he showed that although the practice of medicine was not separated from that of pharmacy among the Greeks and Romans, there was such a separation among the ancient Egyptians, from whom the distinction was handed down to the Copts and by them to the Arabians, and, in fact, that the term pharmacist is probably of Egyptian origin, being derived from Ph-ar-maki, which signifies the preparation of medicine from drugs. The Egyptian pharmaki who were engaged in that occupation belonged to the higher social ranks of writers or academically-educated persons, comprising also the priests, physicians, statesmen, and military commanders.

A paper of more practical character was then read by Professor Partheil, of Bonn, upon the methods of testing various drugs, etc., in regard to their medicinal value, ammonium carbonate, extract of nux vomica, and carbolic oil being the articles specially referred to. Dr. Heffter, of Leipzig, drew attention to the chemistry of the Cactacæ, a class of plants which have hitherto been regarded only as furnishing the food of cochineal insects. More recently

the observations of Schumann, Lewin, and others have shown that some members of the cactus family contain alkaloids. Heffter's investigations have furnished very interesting additions to the knowledge of the Cactaceæ. He has shown that the mescale buttons known by the name of Pellote, and often mentioned under that name as being used for medicinal purposes by the Mexican Indians as well as in various religious ceremonies, are derived from a species of cactus, viz., *Anhalonium lewinii*. Botanically closely related to that plant is *Anhalonium williamei*, which contains about 0·9 per cent. of the alkaloid to which Heffter gives the name of pellotine, $C_{13}H_{19}NO_3$. This crystalline base is a narcotic, and the plant from which it is obtained also contains abundance of malic acid and quercite, but no tannin. *Anhalonium lewinii* contains in smaller quantity a mixture of the alkaloids anhalonine, $C_{12}H_{15}NO_3$, mescalin, $C_{11}H_{17}NO_3$, anhalonidine, $C_{12}H_{15}NO_3$, and lophophorin, $C_{13}H_{17}NO_3$. *A. fissuratum* contains 0·02 per cent. anhaline, $C_{10}H_{17}NO$, and *A. prismaticum* contains a small amount of an extremely poisonous alkaloid. Goebel has suggested that these succulent plants may be protected from the attacks of insects by their poisonous constituents, and that appears to be the case in *A. lewinii*, which is destitute of protection by other means, such as spines, wax-coating, etc. Guided by that observation, Heffter has examined other kinds of cactus which are unprotected, and has found traces of alkaloids in *Phyllocenеus ackermanni*, *Epiphyllum russelianum*, and *Astrophylum myriostigma*. *Echinoceneus mamillosus* contains a paralysing base, *Anhalonium visnagra* a base producing violent tetanus, and some other kinds of cactus contain bases which act upon the heart.

At a sitting of the combined medical sections on the 23rd, Dr. Paul Rosenberg, of Berlin, read a paper on the preservation of food materials by means of a dilute solution of formic aldehyde in methylic alcohol, which is diffused into the air from a porous clay slab by heating. Evidence was produced to show that by this means the development of pathogenic bacteria is prevented or very considerably retarded. Fresh meat, etc., treated in this manner, and then coated with a layer of gelatin, was shown, which had been kept for several months without losing its freshness of smell or taste. Another preparation recommended as applicable to therapeutic purposes contains menthol, which serves to counteract the irritating action of formic aldehyde upon the respiratory organs. The very small quantity of formic aldehyde requisite for producing the desired effect was insisted upon as an important point.

A paper was read by Professor Hartwich, of Zurich, on some abnormal peculiarities in the structure of aconite tubers, and another, by Dr. Schneider, of Dresden, on the determination of boric acid, drew attention to the very remarkable circumstance that in the presence of alcohol vapour, boric acid is so very freely volatilised that it can be completely distilled over from a retort if the neck is protected from cooling. The application of this process is likely to be of considerable utility in analytical operations. Among the subjects of the remaining papers there were several of practical interest from a pharmaceutical point of view, such as the testing of copaiba balsam, the glucosides of black and white mustard, the methods of preserving solutions of volatile substances, and the preparation of ether intended for use as an anæsthetic.

ANNOTATIONS.

The School of Pharmacy, all deserving of support and sympathy as it invariably is, should receive a hearty send-off on the new session's work next Monday afternoon. The importance of the work done by the School and the still greater work that it may accomplish if properly supported is sufficient excuse for recurring to the subject so repeatedly at this time of the year. Moreover, considerable significance will attach to the entries on this occasion, as the loyalty of members to the Society's programme will be tested in a measure by the alacrity with which they respond to the Council's appeal to send their sons to undergo a longer course of study and training than has been customary. In like manner will be proved the sincerity of the attachment of the young men themselves to their chosen craft, and their desire to uphold its traditions honourably and worthily in time to come. The individual who yields to the temptation of obtaining a legal qualification to practise any profession with the minimum of acquirements is exceedingly unlikely ever to attain the first rank and ornament that profession, and even though fate may have no extraordinary good fortune in store for the hardest workers, they will at least have the satisfaction of knowing that they have received no more than they thoroughly earned and fully deserved. These sentiments are, fortunately, not uncommon amongst pharmacists. If all who are animated by such, in addition to the many who are almost persuaded, would but attend the inaugural meeting next week, there is little reason to doubt that a record would be established. Let notice be taken, therefore, of this final reminder that the President—Mr. Walter Hills—will distribute the prizes and certificates to the successful students of last session, on Monday first, at 3 p.m., and that an address to the new students, to be delivered by Mr. R. Brudenell Carter, F.R.C.S., will constitute a no less important item in the programme for the opening day of the fifty-fifth session of the Society's School.

The Privileges of Chemists have been the subject of a warm and lengthy discussion carried on in a Glasgow newspaper, but the main point to be kept in mind—that chemists and druggists possess no privileges, much as they may deserve them—has been entirely lost sight of by the disputants on both sides. Irresponsible critics, for the most part imperfectly informed, are fond of rushing into print in the columns of local newspapers to attack medical men, dentists, pharmacists, and others, the fashion for the time being usually set by some individual more or less directly involved in a breach of the law that has been detected and punished. Appropriate replies to such malicious attacks should appear promptly as a matter of course, but the writers ought always to be on their guard against being drawn into a discussion on side issues. A safe line to adopt is to point out that the Pharmacy Act as it stands was not sought by chemists and druggists, the poison regulations being forced upon them, and that any supposed privileges conferred by the Act have been gradually whittled away by constant and increasing encroachments upon the province of the falsely styled "monopolists." Considering what mountains of prejudice have been made out of the mole-hills of so-called privileges, chemists and druggists are perhaps to be congratulated upon the intangible nature of their "monopoly," the more especially when the imperfect nature of the protection granted in this country to professional bodies generally is borne in mind. After all, the best monopoly is that of special knowledge and skill, as those qualities are bound to make their value felt, even in the face of apparently insuperable odds.

'A Tangled Garden' is the title of Mrs. Fred. Reynolds' latest novel, the prologue of which opens with a declaration of marriage from a good-looking young man with an attractive face, distinguished by "signs of power in the wide level brows and high forehead, balanced by a sensitive droop in the well-formed mouth, which was only partially concealed by the slight brown moustache." Surely this is the noted pharmaceutical caricaturist himself, idealised perhaps, yet none the less recognisable. Anyhow, she won't marry him—can't, in fact, being only a "grass-widow," and so the reader must needs follow the hero through devious paths until at length he arrives at his true goal. What that is, and how it is attained, must be left for the gifted authoress to tell. Suffice it to say that interest is maintained throughout, and no one need regret the time spent in perusing the volume, the publishers of which—Messrs. Hutchinson and Co.—are to be congratulated on its handsome get-up.

The Royal Photographic Society has opened its annual exhibition at 5A, Pall Mall East, and though it is smaller than usual, visitors will find it possesses greater merit generally. In addition to the three hundred and forty-six photographic prints exhibited, which are almost too good to criticise, there are demonstrations with the *x*-rays and the kinematescope, whilst acetylene burners, photo-micrographic apparatus, cameras and appliances of every description illustrate recent progress in the photographic art. The exhibition remains open until November, and a visit will well repay anyone in the least interested in photography and its applications.

The Gresham Lectures will be delivered this year at the Gresham College, Basinghall Street, E.C., on October 6 and three following days, at 6 p.m., by Dr. E. Symes Thompson, the Gresham Professor of Medicine. The topics selected are two of current interest, "Vaccination and the Jenner Centenary" and "The New Photography." The discovery of vaccination and its general introduction will first occupy attention, after which Gloucester will be made to pose as a bad example. Mr. Sydney Rowland will then assist in the practical demonstration and explanation of radiography, in connection with the next two lectures. As the public is freely admitted on these occasions, there is no excuse for small audiences.

The Deutscher Apotheker Verein has celebrated its seventy-fifth anniversary by publishing a handsome quarto volume containing a history of the Association during its long and honourable career. In addition, chemical progress during recent years is reviewed by Professor Ernst Schmidt; the results of the examination and determination of drugs and galenical preparations are summarised by Professor H. Beckurts; and a history of the newer remedies is contributed by Dr. Hermann Thoms.

Sir John Erichsen, LL.D., whose death was announced last week, was the son of a London merchant of Danish origin. He was educated at University College, was a pupil of Sir Robert Carswell, and became a Fellow of the Royal College of Surgeons in 1845, a member of the Council in 1869, and President in 1880. From 1879 to 1881 he served as President of the Royal Medical and Chirurgical Society, and he was also a Fellow of the Royal Society, a corresponding member of many foreign societies, and Surgeon Extraordinary to the Queen. Surgical injuries of the nervous system and the treatment of asphyxia were amongst his special subjects, and upon both of these he wrote authoritative works, in addition to other treatises. A baronetcy was conferred upon him last year.

Sir George Murray Humphry, another distinguished surgeon, also died last week. Graduating from King's College in 1852, he took the degree of M.D. in 1856, was subsequently elected a Fellow of his College, and an Honorary Fellow of Downing College, became Professor of Anatomy in 1866, and was elected first Professor of Surgery at Cambridge University in 1893. Edinburgh conferred upon him the honorary degree of LL.D., and Dublin that of D.Sc., whilst he was knighted in January, 1891. He was successful as an author of surgical books, and had officiated as Vice-President of the British Medical Association, first President of the Anatomical Society of the United Kingdom, and President of the Pathological Society.

The Metric System, as anglicised by Mr. Toms, would apparently be less simple than the scanty reports of his paper, that were alone available last week, would lead readers to believe. The paper will shortly be published at length in the Journal. Meanwhile, however, we are cordially at one with Mr. Martindale regarding the inadvisability of adopting any compromise between British and metric weights and measures. If the latter are to be adopted at all, they must be adopted bodily and become British by the well-known process of national absorption. Nevertheless, the question still remains whether it is not names rather than things that the common people of any country are slow to change. If this be so, the greatest obstacle in the conversion of the British public to the general use of metric weights and measures may lie in the French names, which, it is well known, do not convey such definite ideas to most people, as is the case when the yard, pint, and pound are spoken of. Accordingly, it might be found to facilitate matters were the common English names applied to the metric standards. But whether this be done or not, if it be decided to adopt the new system, there should be no hesitation about taking it over bodily. Most of the difficulties raised by average opponents of the metric system are due to the mental confusion they induce in themselves by trying to think in terms of the British system at the same time. Throw the latter entirely on one side, and the rest is plain sailing. As to the halving and quartering of the metre, litre, and gramme, this can be done readily enough in practice, however impracticable it may appear in theory. The position appears to be that the metric system has come to stay, and even conservative England and the more conservative United States will have to bow to necessity and adopt it for their own.

Reciprocity in Certificates is at present a topic of considerable interest in the British Colonies, the height of their ambition being to obtain recognition of their certificates by Great Britain. Even were the fitness and desirability of such recognition admitted in this country, nothing could be done in the matter until special Parliamentary powers were obtained, inasmuch as no power of recognising the certificates of external examining bodies is conferred by the Pharmacy Acts. The *Australasian Journal of Pharmacy*, referring to an attempt by the Queensland Society to secure unity of action in this matter, points out that there is a striking anomaly in the proposition that Great Britain should be asked to accept the certificates of Colonies which refuse to recognise the certificates of one another, and urges as a necessary preliminary the desirability of having a common inter-colonial examination. It would certainly appear that inter colonial reciprocity is of more pressing importance than any other phase of the question, and much more likely to yield tangible results than reciprocity with the "old country." Indeed, to people living at this side of the world, it seems odd to think that colonials should ever entertain any desire to practise in such a worn-out spot.

The Stele Puzzle is the great bugbear of the student of botany just at present, observes *Natural Science*, and many readers will echo that opinion. As the writer points out, it looks plain sailing enough. There are the three primordial layers at the growing point: dermatogen, developing into epidermis; plerome, forming the central stele; and periblem, yielding the extra-stelar tissue between the stele and the epidermis. The endodermis—a layer characterised by the presence of starch in its cells and curious thickenings on its radial walls—limits the extra-stelar tissue, but the student often fails to find this when he cuts sections of the stem. "He goes on bravely, but 'schizostely' puzzles him, and when he comes to *Equisetum* he gives it up as hopeless." As a remedy he is advised "to put a pin through those pages in his text-book," and find an opportunity of reading Tansley's excellent account of the theory published in the numbers of *Science Progress* for April and May last, and summarised in the *Ph. J.* for May 16 (p. 393). What Van Tieghem did was to draw attention to the striking similarity in the internal structure of all roots. They contain a central cylinder consisting primarily of strands of wood and bast separated by parenchymatous "conjunctive cells," the whole being surrounded by a pericambium or pericycle, and bounded on the outside by the innermost layer of the cortex. This arrangement in the root is continued through the hypocotyl into the stem, and in the stems of many seed-plants it is easy to trace a pericycle which is continuous with that of the root, whilst also surrounding the system of vascular bundles. These bundles are separated by conjunctive tissue, with which is included the pith. Further, continuous with the endodermis of the root, there is a similar layer in the stem, which forms the limit of the cortex towards the central cylinder. Thus, root, hypocotyl, and stem have one continuous stele.

The Monostelic Arrangement as thus described is easy of recognition. But there are exceptions to this typical "monostelic" form, where sections reveal no endodermal layer round the central bundle system. In such cases as that of *Equisetum*, Strasburger suggests the term "phlœoterma" for the layer next outside the stele. This layer may have endodermoid characters, or may be indistinguishable from the other cortical layers. But the main difficulty, that of searching vainly for an endodermis, is removed if a phlœoterma be imagined, which surrounds the whole bundle system, and may or may not possess the characters of an endodermis. Thus *Equisetum* can be regarded as a monostelic plant if we imagine it to possess a phlœoterma. With regard to more complicated forms, polystely occurs in the stems of ferns and selaginellas, the roots of some palms, and in the stems of *Gunnera* and species of *Auricula*, each separate stele containing bundles of wood and bast, separated by conjunctive tissue, surrounded by a pericycle, and bounded at the cortex by the phlœoterma, which generally shows endodermoid characters. Finally, schizosteles or meristeles are portions of steles which run from the stem into the petiole of the leaf, continuing unbroken, as in *Pinus*, or branching repeatedly. The stelar theory is thus seen to be less complicated than it is often made to appear. It is also of great value, as it directs attention to the vascular system as a whole, and thus supplies a general standpoint from which to view the internal anatomy of the plant axis and its branches.

The Sheffield School of Pharmacy still survives, in spite of the frequent changes in its teaching staff that unfortunately retard progress. Its continued existence, however, affords strong proof of the necessity of such an institution, and it may be hoped that Mr. David Storrar's address on Thursday next will serve as a useful stimulus.

BRADFORD AND DISTRICT CHEMISTS' ASSOCIATION.

The first annual meeting of this Association was held on Wednesday, September 23, at the Royal Hotel, Darley Street. There was a good attendance of members, the chair being occupied by Mr. E. Mackay, President.

The Treasurer, Mr. Silson, read his statement, showing a balance in hand of £10. The Secretary, Mr. Pickard, in presenting his report, said the number of members on the books was thirty-five; since October last the Association had held three ordinary meetings, ten Council meetings, and a special general meeting of chemists to meet a deputation from "The Proprietary Articles Trade Association." He considered the Association was now firmly established, and only needed the hearty co-operation of individual members to ensure its having a long and useful future before it.

The President proposed, and Mr. Geo. Remmington seconded, that the Treasurer's and Secretary's reports be adopted.—Carried.

On the motion of Mr. A. H. Waddington, seconded by Mr. R. W. Silson, several important alterations in the rules were agreed to.

The following officers were re-elected:—Mr. E. Mackay (President), Mr. Geo. Remmington and Mr. H. Dunn (Vice-Presidents), Mr. S. N. Pickard (Hon. Secretary), Mr. R. W. Silson (Treasurer). Messrs. J. A. Mitchell, J. M. Newbould, H. Rogerson, F. K. Taylor, A. H. Waddington, and D. W. R. Wilson, were elected on the Council.

SHEFFIELD SCHOOL OF MEDICINE.

The winter session of the Sheffield School of Medicine was formally opened on Thursday afternoon, October 1, when Sir Henry Littlejohn, M.D., LL.D., of Edinburgh, delivered an address to the students and others on "The Advantages of a Provincial Medical School." Sir Henry said, to his mind, in schools such as those of London, Edinburgh, and Dublin, it was impossible to provide for the suitable supervision of the studies of young men. There was not that necessary close companionship between the student and his teacher, the personal influence of the professor being wanting. He looked to the provincial schools alone to supply the deficiencies of the larger schools and for a return to that system by which the student and his teacher is brought into closer contact. In a school like that of Sheffield, where the number of pupils is necessarily limited, a system of tuition could be carried out resembling the old pupilage in its best features, and yet with none of its drawbacks. But to enable the School to hold its own among the rivals there must be endowment of the various chairs. Discussing the question of the desirability of Sheffield as a home for the studious student, his conclusions were favourable to the place. The many noisy industries supplied their compensations in the means they furnish the student of perfecting himself in the treatment of injuries of all kinds, and the city was not deficient in historical associations—a point which he regarded as one of considerable importance.

MIDLAND PHARMACEUTICAL ASSOCIATION.

Mr. Jeffry Poole presided at a meeting of the Council of this Association, held on Tuesday, September 29. The programme for the session 1896–7 was arranged, and includes the President's address (Mr. F. J. Gibson), four evenings for reading of papers, two social evenings, and, if possible, the annual ball. Mr. J. C. Mackenzie was appointed Assistant-Secretary. The following resolution was also passed:—"That the appointment of local secretaries by the P.A.T.A., should be left as far as possible in the hands of the local pharmaceutical associations."

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

PRESIDENTIAL ADDRESS AT LIVERPOOL.

BY

SIR JOSEPH LISTER, Bart., D.C.L., LL.D., P.R.S.

MODERN SCIENCE IN MEDICAL AND SURGICAL PRACTICE.

(*Concluded from page* 266.)

The first rational step towards the prevention or cure of disease is to know its cause, and it is impossible to over-estimate the practical value of researches such as those to which I am now referring. Among their many achievements is what may be fairly regarded as the most important discovery ever made in pathology, because it revealed the true nature of the disease which causes more sickness and death in the human race than any other. It was made by Robert Koch, who greatly distinguished himself, when a practitioner in an obscure town in Germany, by the remarkable combination of experimental acuteness and skill, chemical and optical knowledge and successful micro-photography which he brought to bear upon the illustration of infective diseases of wounds in the lower animals, in recognition of which service the enlightened Prussian Government at once appointed him to an official position of great importance in Berlin. There he conducted various important researches, and at the London Congress in 1881 he showed to us for the first time the bacillus of tubercle. Wonderful light was thrown by this discovery upon a great group of diseases which had before been rather guessed than known to be of an allied nature, a precision and efficacy never before possible was introduced into their surgical treatment, while the physician became guided by new and sure light as regards their diagnosis and prevention.

The Introduction of Plate Cultures.

At that same London Congress Koch demonstrated to us his "plate culture" of bacteria, which was so important that I must devote a few words to its description. With a view to the successful study of the habits and effects of any particular microbe outside the living body, it is essential that it should be present unmixed in the medium in which it is cultivated. It can be readily understood how difficult it must have been to isolate any particular micro-organism when it existed mixed, as was often the case, with a multitude of other forms. In fact, the various ingenious attempts made to effect this object had often proved entire failures. Koch, however, by an ingenious procedure converted what had been before impossible into a matter of the utmost facility. In the broth or other nutrient liquid which was to serve as food for the growing microbe he dissolved, by aid of heat, just enough gelatin to ensure that, while it should become a solid mass when cold, it should remain fluid though reduced in temperature so much as to be incapable of killing living germs. To the medium thus partially cooled was added some liquid containing, among others, the microbe to be investigated; and the mixture was thoroughly shaken, so as to diffuse the bacteria and separate them from each other. Some of the liquid was then poured out in a thin layer upon a glass plate and allowed to cool, so as to assume the solid form. The various microbes, fixed in the gelatin and so prevented from intermingling, proceeded to develop each its special progeny, which in course of time showed itself as an opaque speck in the transparent film. Any one of such specks could now be removed and transferred to another vessel in which the microbe composing it grew in perfect isolation.

Pasteur was present at this demonstration, and expressed his sense of the great progress effected by the new method. It was soon introduced into his own Institute and other laboratories throughout the world, and it has immensely facilitated bacteriological study.

One fruit of it in Koch's own hands was the discovery of the microbe of cholera in India, whither he went to study the disease. This organism was termed by Koch, from its curved form, the "comma bacillus," and by the French the cholera vibrio. Great doubts were for a long time felt regarding this discovery. Several other kinds of bacteria were found of the same shape, some of them producing very similar appearances in culture media. But bacteriologists are now universally agreed that, although various other conditions are necessary to the production of an attack of cholera besides the mere presence of the vibrio, yet it is the essential *materies morbi*; and it is by the aid of the diagnosis which its presence in any case of true cholera enables the bacteriologist to make, that threatened invasions of this awful disease have of late years been so successfully repelled from our shores. If bacteriology had done nothing more for us than this, it might well have earned our gratitude.

Pasteur's Earlier Work.

I have next to invite your attention to some earlier work of Pasteur. There is a disease known in France under the name of *choléra des poules*, which often produced great havoc among the poultry yards of Paris. It had been observed that the blood of birds that had died of this disease was peopled by a multitude of minute bacteria, not very dissimilar in form and size to the microbe of the lactic ferment to which I have before referred. And Pasteur found that, if this bacterium was cultivated outside the body for a protracted period under certain conditions, it underwent a remarkable diminution of its virulence; so that, if inoculated into a healthy fowl, it no longer caused the death of the bird, as it would have done in its original condition, but produced a milder form of the disease which was not fatal. And this altered character of the microbe, caused by certain conditions, was found to persist in successive generations cultivated in the ordinary way. Thus was discovered the great fact of what Pasteur termed the *atténuation des virus*, which at once gave the clue to understanding what had before been quite mysterious, the difference in virulence of the same disease in different epidemics.

But he made the further very important observation that a bird which had gone through the mild form of the complaint had acquired immunity against it in its most virulent condition. Pasteur afterwards succeeded in obtaining mitigated varieties of microbes for some other diseases; and he applied with great success the principle which he had discovered in fowl-cholera for protecting the larger domestic animals against the plague of anthrax. The preparations used for such preventive inoculations he termed "vaccins," in honour of our great countryman, Edward Jenner. For Pasteur at once saw the analogy between the immunity to fowl-cholera produced by its attenuated virus and the protection afforded against small-pox by vaccination. And while pathologists still hesitated, he had no doubt of the correctness of Jenner's expression *variolæ vaccinæ*, or small-pox in the cow.

It is just a hundred years since Jenner made the crucial experiment of inoculating with small-pox a boy whom he had previously vaccinated, the result being, as he anticipated, that the boy was quite unaffected. It may be remarked that this was a perfectly legitimate experiment, involving no danger to the subject of it. Inoculation was at that time the established practice; and if vaccination should prove nugatory, the inoculation would be only what would have been otherwise called for; while it would be perfectly harmless if the hoped-for effect of vaccination had been produced.

The Centenary of Jenner's Discovery.

We are a practical people, not much addicted to personal commemorations: although our nation did indeed celebrate with fitting splendour the jubilee of the reign of our beloved Queen; and at the invitation of Glasgow the scientific world has lately marked in a manner, though different, as imposing, the jubilee of the life-work of a sovereign in science (Lord Kelvin). But while we cannot be astonished that the centenary of Jenner's immortal discovery should have failed to receive general recognition in this country, it is melancholy to think that this year should, in his native country, have been distinguished by a terrible illustration of the results which would sooner or later inevitably follow the general neglect of his prescriptions.

I have no desire to speak severely of the Gloucester Guardians. They are not sanitary authorities, and had not the technical knowledge necessary to enable them to judge between the teachings of true science and the declamations of misguided, though well-meaning, enthusiasts. They did what they believed to be right; and when roused to a sense of the greatness of their mistake, they did their very best to repair it, so that their city is said to be now the best vaccinated in Her Majesty's dominions. But though by their praiseworthy exertions they succeeded in promptly checking the raging epidemic, they cannot recall the dead to life, or restore beauty to marred features, or sight to blinded eyes. Would that the entire country and our Legislature might take duly to heart this object-lesson!

How completely the medical profession were convinced of the efficacy of vaccination in the early part of this century was strikingly illustrated by an account given by Professor Crookshank, in his interesting history of this subject, of several eminent medical men in Edinburgh meeting to see the to them unprecedented fact of a vaccinated person having taken small-pox. It has, of course, since become well known that the milder form of the disease, as modified by passing through the cow, confers a less permanent protection than the original human disorder. This it was, of course, impossible for Jenner to foresee. It is, indeed, a question of degree, since a second attack of ordinary small-pox is occasionally known to occur, and vaccination, long after it has ceased to give perfect immunity, greatly modifies the character of the disorder and diminishes its danger. And, happily, in re-vaccination after a certain number of years we have the means of making Jenner's work complete. I understand that the majority of the Commissioners, who have recently issued their report upon this subject, while recognising the value and importance of re-vaccination, are so impressed with the difficulties that would attend making it compulsory by legislation that they do not recommend that course; although it is advocated by two of their number who are of peculiarly high authority on such a question. I was lately told by a Berlin professor that no serious difficulty is experienced in carrying out the compulsory law that prevails in Germany. The masters of the schools are directed to ascertain in the case of every child attaining the age of twelve whether re-vaccination has been practised. If not, and the parents refuse to have it done, they are fined one mark. If this does not prove effectual, the fine is doubled: and if even the double penalty should not prove efficacious, a second doubling of it would follow, but, as my informant remarked, it is very seldom that it is called for. The result is that small-pox is a matter of extreme rarity in that country; while it is absolutely unknown in the huge German army, in consequence of the rule that every soldier is re-vaccinated on entering the service. Whatever view our Legislature may take on this question, one thing seems to me clear: that it will be the duty of Government to encourage by every available means the use of calf lymph, so as to exclude the possibility of the communication of any human disease to the child, and to institute such efficient inspection of vaccination institutes as shall ensure careful antiseptic arrangements, and so prevent contamination by extraneous microbes. If this were done, "conscientious objections" would cease to have any rational basis. At the same time, the administration of the regulations on vaccination should be transferred (as advised by the Commissioners) to competent sanitary authorities.

Pasteur's Study of Rabies.

But to return to Pasteur. In 1880 he entered upon the study of that terrible but then most obscure disease, hydrophobia or rabies, which from its infective character he was sure must be of microbic origin, although no micro-organism could be detected in it. He early demonstrated the new pathological fact that the virus had its essential seat in the nervous system. This proved the key to his success in this subject. One result that flowed from it has been the cause of unspeakable consolation to many. The foolish practice is still too prevalent of killing the dog that has bitten any one, on the absurd notion that, if it were mad, its destruction would prevent the occurrence of hydrophobia in the person bitten. The idea of the bare possibility of the animal having been so affected causes an agony of suspense during the long weeks or months of possible incubation of the disease. Very serious nervous symptoms aping true hydrophobia have been known to result from the terror thus inspired. Pasteur showed that if a little of the brain or spinal cord of a dog that had been really mad was inoculated in an appropriate manner into a rabbit, it infallibly caused rabies in that animal in a few days. If, therefore, such an experiment was made with a negative result, the conclusion might be drawn with certainty that the dog had been healthy. It is perhaps right that I should say that the inoculation is painlessly done under an anæsthetic, and that in the rabbit rabies does not assume the violent form that it does in the dog, but produces gradual loss of power with little if any suffering.

This is the more satisfactory because rabbits in which the disease has been thus artificially induced are employed in carrying out what was Pasteur's greatest triumph, the preventive treatment of hydrophobia in the human subject. We have seen that Pasteur discovered that microbes might under some circumstances undergo mitigation of their virulence. He afterwards found that under different conditions they might have it exalted, or, as he expressed it, there might be a *renforcement du virus*. Such proved to be the case with rabies in the rabbit; so that the spinal cords of animals which had died of it contained the poison in a highly intensified condition. But he also found that if such a highly virulent cord was suspended under strict antiseptic precautions in a dry atmosphere at a certain temperature, it gradually from day to day lost in potency, till in course of time it became absolutely inert. If now an emulsion of such a harmless cord was introduced under the skin of an animal, as in the subcutaneous administration of morphia, it might be followed without harm another day by a similar dose of a cord still rather poisonous; and so from day to day stronger and stronger injections might be used, the system becoming gradually accustomed to the poison, till a degree of virulence had been reached far exceeding that of the bite of a mad dog. When this had been attained, the animal proved incapable of taking the disease in the ordinary way; and more than that, if such treatment was adopted after an animal had already received the poison, provided that too long a time had not elapsed, the outbreak of the disease was prevented. It was only after great searching of heart that Pasteur, after consultation with some trusted medical friends, ventured upon trying this practice upon man. It has since been extensively adopted in various parts of the world with increasing success as the details of the method were improved. It is not of course the case that everyone bitten by a really rabid animal takes the disease; but the percentage of those who do so, which was formerly large, has been reduced almost to zero by this treatment, if not too long delayed.

While the intensity of rabies in the rabbit is undoubtedly due to a peculiarly virulent form of the microbe concerned, we cannot suppose that the daily diminishing potency of the cord suspended in dry warm air is an instance of attenuation of virus, using the term "virus" as synonymous with the microbe concerned. In other words, we have no reason to believe that the special micro-organism of hydrophobia continues to develop in the dead cord and produce successively a milder and milder progeny, since rabies cannot be cultivated in the nervous system of a dead animal. We must rather conclude that there must be some chemical poison present which gradually loses its potency as time passes. And this leads me to refer to another most important branch of this large subject of bacteriology, that of the poisonous products of microbes.

The Toxins of Diphtheria and Tuberculosis.

It was shown several years ago by Roux and Yersin, working in the *Institut Pasteur*, that the crust or false membrane which forms upon the throats of patients affected with diphtheria contains bacteria which can be cultivated outside the body in a nutrient liquid, with the result that it acquires poisonous qualities of astonishing intensity, comparable to that of the secretion of the poison-glands of the most venomous serpents. And they also ascertained that the liquid retained this property after the microbes had been removed from it by filtration, which proved that the poison must be a chemical substance in solution, as distinguished from the living element which had produced it. These poisonous products of bacteria, or toxins as they have been termed, explain the deadly effects of some microbes, which it would otherwise be impossible to understand. Thus, in diphtheria itself the special bacillus which was shown by Löffler to be its cause, does not become propagated in the blood, like the microbe of chicken cholera, but remains confined to the surface on which it first appeared: but the toxin which it secretes is absorbed from that surface into the blood, and so poisons the system. Similar observations have been made with regard to the microbes of some other diseases, as, for example, the bacillus of tetanus or lockjaw. This remains localised in the wound, but forms a special toxin of extreme potency, which becomes absorbed and diffused through the body.

Wonderful as it seems, each poisonous microbe appears to form its own particular toxin. Koch's tuberculin was of this nature, a product of the growth of the tubercule bacillus in culture media. Here, again, great effects were produced by extremely minute quantities of the substance, but here a new peculiarity showed itself, viz., that patients affected with tubercular disease, in any of its varied forms, exhibited inflammation in the affected part and general fever after receiving under the skin an amount of the material which had no effect whatever upon healthy persons. I witnessed in Berlin some instances of these effects, which were simply astounding. Patients affected with a peculiar form of obstinate ulcer of the face showed, after a single injection of the tuberculin, violent inflammatory redness and swelling of the sore and surrounding skin; and, what was equally surprising, when this disturbance

subsided the disease was found to have undergone great improvement. By repetitions of such procedures, ulcers which had previously been steadily advancing, in spite of ordinary treatment, became greatly reduced in size, and in some instances apparently cured. Such results led Koch to believe that he had obtained an effectual means of dealing with tubercular disease in all its forms. Unhappily, the apparent cure proved to be only of transient duration, and the high hopes which had been inspired by Koch's great reputation were dashed. It is but fair to say that he was strongly urged to publish before he was himself disposed to do so, and we cannot but regret that he yielded to the pressure put upon him.

But though Koch's sanguine anticipations were not realised, it would be a great mistake to suppose that his labours with tuberculin have been fruitless. Cattle are liable to tubercle, and, when affected with it, may become a very serious source of infection for human beings, more especially when the disease affects the udders of cows, and so contaminates the milk. By virtue of the close affinity that prevails between the lower animals and ourselves, in disease as well as in health, tuberculin produces fever in tubercular cows in doses which do not affect healthy beasts. Thus, by the subcutaneous use of a little of the fluid, tubercle latent in internal organs of an apparently healthy cow can be with certainty revealed, and the slaughter of the animal after this discovery protects man from infection.

Good Resulting from Koch's Work.

It has been ascertained that glanders presents a precise analogy with tubercle as regards the effects of its toxic products. If the microbe which has been found to be the cause of this disease is cultivated in appropriate media, it produces a poison which has received the name of mallein, and the subcutaneous injection of a suitable dose of this fluid into a glandered horse causes striking febrile symptoms which do not occur in a healthy animal. Glanders, like tubercle, may exist in insidious latent forms which there was formerly no means of detecting, but which are at once disclosed by this means. If a glandered horse has been accidentally introduced into a large stable, this method of diagnosis surely tells if it has infected others. All receive a little mallein. Those who become affected with fever are slaughtered, and thus not only is the disease prevented from spreading to other horses, but the grooms are protected from a mortal disorder.

This valuable resource sprang from Koch's work on tuberculin, which has also indirectly done good in other ways. His distinguished pupil, Behring, has expressly attributed to those researches the inspiration of the work which led him and his since famous collaborateur, the Japanese Kitasato, to their surprising discovery of antitoxic serum. They found that if an animal of a species liable to diphtheria or tetanus received a quantity of the respective toxin, so small as to be harmless, and afterwards, at suitable intervals, successfully stronger and stronger doses, the creature, in course of time, acquired such a tolerance for the poison as to be able to receive with impunity a quantity very much greater than would at the outset have proved fatal. So far, we have nothing more than seems to correspond with the effects of the increasingly potent cords in Pasteur's treatment of rabies. But what was entirely new in their results was that, if blood was drawn from an animal which had acquired this high degree of artificial immunity, and some of the clear fluid or serum which exuded from it after it had clotted was introduced under the skin of another animal, this second animal acquired a strong, though more transient, immunity against the particular toxin concerned. The serum in some way counteracted the toxin or was antitoxic. But, more than that, if some of the antitoxic serum was applied to an animal after it had already received a poisonous dose of the toxin, it preserved the life of the creature, provided that too long a time had not elapsed after the poison was introduced. In other words, the antitoxin proved to be not only preventive but curative.

The Effects of Antitoxins.

Similar results were afterwards obtained by Ehrlich, of Berlin, with some poisons not of bacterial origin, but derived from the vegetable kingdom, and quite recently the independent labours of Calmette, of Lille and Fraser, of Edinburgh, have shown that antidotes of wonderful efficacy against the venom of serpents may be procured on the same principle. Calmette has obtained antitoxin so powerful that a quantity of it only a 200,000th part of the weight of an animal will protect it perfectly against a dose of the secretion of the poison glands of the most venomous serpents known to exist, which without such protection would have proved fatal in four hours. For curative purposes larger quantities of the remedy are required, but cases have been already published by Calmette in which death appears to have been averted in the human subject by this treatment.

Behring's darling object was to discover means of curing tetanus and diphtheria in man. In tetanus the conditions are not favourable, because the specific bacilli lurk in the depths of the wound, and only declare their presence by symptoms caused by their toxin having been already in a greater or less amount diffused through the system, and in every case of this disease there must be a fear that the antidote may be applied too late to be useful. But in diphtheria the bacilli very early manifest their presence by the false membrane which they cause upon the throat, so that the antitoxin has a fair chance, and here we are justified in saying that Behring's object has been attained.

The problem, however, was by no means so simple as in the case of some mere chemical poison. However effectual the antitoxin might be against the toxin, if it left the bacilli intact, not only would repeated injections be required to maintain the transient immunity to the poison perpetually secreted by the microbes, but the bacilli might by their growth and extension cause obstruction of the respiratory passages.

Roux, however, whose name must always be mentioned with honour in relation to this subject, effectually disposed of this difficulty. He showed by experiments on animals that a diphtheritic false membrane, rapidly extending and accompanied by surrounding inflammation, was brought to a stand by the use of the antitoxin, and soon dropped off, leaving a healthy surface. Whatever be the explanation, the fact was thus established that the antitoxic serum, while it renders the toxin harmless, causes the microbe to languish and disappear.

No theoretical objections could now be urged against the treatment; and it has during the last two years been extensively tested in practice in various parts of the world, and it has gradually made its way more and more into the confidence of the profession. One important piece of evidence in its favour in this country is derived from the report of the six large hospitals under the management of the London Asylums Board. The medical officers of these hospitals at first naturally regarded the practice with scepticism; but as it appeared to be at least harmless, they gave it a trial; and during the year 1895 it was very generally employed upon the 2182 cases admitted; and they have all become convinced of its great value. In the nature of things, if the theory of the treatment is correct, the best results must be obtained when the patients are admitted at an early stage of the attack, before there has been time for much poisoning of the system: and accordingly we learn from the report that, comparing 1895 with 1894, during which latter year the ordinary treatment had been used, the percentage of mortality, in all the six hospitals combined, among the patients admitted on the first day of the disease, which in 1894 was 22·5, was only 4·6 in 1895; while for those admitted on the second day the numbers are 27 for 1894 and 14·8 for 1895. Thus for cases admitted on the first day the mortality was only one-fifth of what it was in the previous year, and for those entertaining on the second it was halved. Unfortunately in the low parts of London which furnish most of these patients the parents too often delay sending in the children till much later: so that on the average no less than 67·5 per cent. were admitted on the fourth day of the disease or later. Hence the aggregate statistics of all cases are not nearly so striking. Nevertheless, taking it altogether, the mortality in 1895 was less than had ever before been experienced in those hospitals. I should add that there was no reason to think that the disease was of a milder type than usual in 1895; and no change whatever was made in the treatment except as regards the antitoxic injections.

There is one piece of evidence recorded in the report which, though it is not concerned with high numbers, is well worthy of notice. It relates to a special institution to which convalescents from scarlet fever are sent from all the six hospitals. Such patients occasionally contract diphtheria, and when they do so the added disease has generally proved extremely fatal. In the five years preceding the introduction of the treatment with antitoxin the mortality from this cause had never been less than 50 per cent., and averaged on the whole 61·9 per cent. During 1895, under antitoxin, the deaths among the 119 patients of this class were only 7·5 per cent., or one-eighth of what had been previously experienced. This very striking result seems to be naturally explained by the fact that these patients being already in hospital when the diphtheria appeared, an unusually early opportunity was afforded for dealing with it.

There are certain cases of so malignant a character from the first that no treatment will probably ever be able to cope with them. But taking all cases together it seems probable that Behring's hope that the mortality may be reduced to 5 per cent. will be fully realised when the public become alive to the paramount importance of having the treatment commenced at the outset of the disease.

There are many able workers in the field of bacteriology whose names time does not permit me to mention, and to whose important labours I cannot refer; and even those researches of which I have spoken have been, of course, most inadequately dealt with. I feel this especially with regard to Pasteur, whose work shines out more brightly the more his writings are perused.

The Wonders of Phagocytosis.

I have lastly to bring before you a subject which, though not bacteriological, has intimate relations with bacteria. If a drop of blood is drawn from the finger by a prick with a needle and examined microscopically between two plates of glass, there are seen in it minute solid elements of two kinds, the one pale orange biconcave discs, which, seen in mass, give the red colour to the vital fluid, the other more or less granular spherical masses of the soft material called protoplasm, destitute of colour, and therefore called the colourless or white corpuscles. It has been long known that if the microscope was placed at such a distance from a fire as to have the temperature of the human body, the white corpuscles might be seen to put out and retract little processes or pseudopodia, and by their means crawl over the surface of the glass, just like the extremely low forms of animal life termed, from this faculty of changing their form, amœbæ. It was a somewhat weird spectacle, that of seeing what had just before been constituents of our own blood moving about like independent creatures. Yet there was nothing in this inconsistent with what we knew of the fixed components of the animal frame. For example, the surface of a frog's tongue is covered with a layer of cells, each of which is provided with two or more lashing filaments of cilia, and those of all the cells acting in concert cause a constant flow of fluid in a definite direction over the organ. If we gently scrape the surface of the animal's tongue, we can detach some of these ciliated cells; and on examining them with the microscope in a drop of water, we find that they will continue for an indefinite time their lashing movements, which are just as much living or vital in their character as the writhings of a worm. And, as I observed many years ago, these detached cells behave under the influence of a stimulus just like parts connected with the body, the movements of the cilia being excited to greater activity by gentle stimulation, and thrown into a state of temporary inactivity when the irritation was more severe. Thus each constituent element of our bodies may be regarded as in one sense an independent living being, though all work together in marvellous harmony for the good of the body politic. The independent movements of the white corpuscles outside the body were therefore not astonishing: but they long remained matters of mere curiosity. Much interest was called to them by the observation of the German pathologist Cohnheim that in some inflammatory conditions they passed through the pores in the walls of the finest blood-vessels, and thus escaped into the interstices of the surrounding tissues. Cohnheim attributed their transit to the pressure of the blood. But why it was that, though larger than the red corpuscles, and containing a nucleus which the red ones have not, they alone passed through the pores of the vessels, or why it was that this emigration of the white corpuscles occurred abundantly in some inflammations and was absent in others, was quite unexplained.

These white corpuscles, however, have been invested with extraordinary new interest by the researches of the Russian naturalist and pathologist, Metchnikoff. He observed that, after passing through the walls of the vessels, they not only crawl about like amœbæ, but, like them, receive nutritious materials into their soft bodies and digest them. It is thus that the effete materials of a tadpole's tail are got rid of; so that they play a most important part in the function of absorption.

But still more interesting observations followed. He found that a microscopic crustacean, a kind of water-flea, was liable to be infested by a fungus which had exceedingly sharp-pointed spores. These were apt to penetrate the coats of the creature's intestine, and project into its body-cavity. No sooner did this occur with any spore than it became surrounded by a group of the cells which are contained in the cavity of the body, and correspond to the white corpuscles of our blood. These proceeded to attempt to devour the spore, and if they succeeded, in every such case the animal was saved from the invasion of the parasite. But if the spores were more than could be disposed of by the devouring cells (phagocytes, as Metchnikoff termed them), the water-flea succumbed.

Starting from this fundamental observation, he ascertained that the microbes of infective diseases are subject to this same process of devouring and digestion, carried on both by the white corpuscles and by cells that line the blood-vessels. And by a long series of most beautiful researches he has, as it appears to me, firmly established the great truth that phagocytosis is the main defensive means possessed by the living body against the invasions of its microscopic foes. The power of the system to produce antitoxic substances to counteract the poisons of microbes is undoubtedly in its own place of great importance. But in the large class of cases in which animals are naturally refractory to particular infective diseases the blood is not found to yield any antitoxic element by which the natural immunity can be accounted for. Here phagocytosis seems to be the sole defensive agency. And even in cases in which the serum does possess antitoxic, or, as it would seem in some cases, germicidal properties, the bodies of the dead microbes must at last be got rid of by phagocytosis, and some recent observations would seem to indicate that the useful elements of the serum may be, in part at least, derived from the digestive juices of the phagocytes. If ever there was a romantic chapter in pathology, it has surely been that of the story of phagocytosis.

I was myself peculiarly interested by these observations of Metchnikoff's, because they seemed to me to afford clear explanation of the healing of wounds by first intention under circumstances before incomprehensible. This primary union was sometimes seen to take place in wounds treated with water-dressing, that is to say, a piece of wet lint covered with a layer of oiled silk to keep it moist. This, though cleanly when applied, was invariably putrid within twenty-four hours. The layer of blood between the cut surfaces was thus exposed at the outlet of the wound to a most potent septic focus. How was it prevented from putrefying, as it would have done under such influence if, instead of being between divided living tissues, it had been between plates of glass or other indifferent material? Pasteur's observations pushed the question a step further. It now was, How were the bacteria of putrefaction kept from propagating in the decomposable film? Metchnikoff's phagocytosis supplied the answer. The blood between the lips of the wound became rapidly peopled with phagocytes, which kept guard against the putrefactive microbes and seized them as they endeavoured to enter.

If phagocytosis was ever able to cope with septic microbes in so concentrated and intense a form, it could hardly fail to deal effectually with them in the very mitigated condition in which they are present in the air. We are thus strongly confirmed in our conclusion that the atmospheric dust may safely be disregarded in our operations, and Metchnikoff's researches, while they have illumined the whole pathology of infective diseases, have beautifully completed the theory of antiseptic treatment in surgery.

I might have taken equally striking illustrations of my theme from other departments in which microbes play no part. In fact any attempt to speak of all that the art of healing has borrowed from science and contributed to it during the past half-century would involve a very extensive dissertation on pathology and therapeutics. I have culled specimens from a wide field, and I only hope that in bringing them before you I have not overstepped the bounds of what is fitting before a mixed company. For many of you my remarks can have had little, if any, novelty; for others they may perhaps possess some interest as showing that medicine is no unworthy ally of the British Association—that, while her practice is ever more and more based on science, the ceaseless efforts of her votaries to improve what have been fittingly designated *Quæ prosunt omnibus artes*, are ever adding largely to the sum of abstract knowledge.

Ferrostyptin.—Under this name a dark yellow crystalline body, readily soluble in water, has been introduced by Eichengrün as a combined hæmostatic and disinfectant. It is used both externally by injection and *per os*. The powder itself or a strong solution may be applied directly to a bleeding surface. When taken internally ferrostyptin is given to adults in doses of from 30 to 50 centigrammes. For uterine or vaginal injection a 10 to 40 per cent. solution may be used. It is less irritating in its action than ferric chloride, has a greater styptic action, and does not stain the skin or the linen.—*Therap. Monats.*, x., 442.

NEW REMEDIES.

[*The notes given under this heading embody recent suggestions in therapeutics. They cover both new drugs and preparations, and old ones under new aspects. The word "parts" is used to represent parts by weight, both for solids and liquids.*]

Nitrate of Potassium for Burns.—When applied to burns, a saturated cold solution of nitrate of potassium gives immediate relief from pain, and if employed soon after the accident, may prevent the formation of blisters and greatly lessen the inflammation. Poggi finds that compresses saturated with saltpetre solution have a similar refrigerant and antiphlogistic action: burns dressed with them become less painful and soon heal.—*L'Union Pharmaceut.*, xxxvii., 346.

Magnesia Paste for Burns.—In treating burns of the first and second degree, Vergely has obtained excellent results by covering the parts with a thick layer of a paste of magnesia and water, which is allowed to dry on the skin; as the dried flakes fall off they are replaced by a fresh dressing of moist paste. Under the protective crust of magnesia the sores heal rapidly without leaving behind them cutaneous pigmentations, such as are often observed after burns which remain exposed to the atmosphere.—*L'Union Pharmaceut.*, xxxvii., 346.

Sozoiodol in Soft Chancre.—Some thirty observations made by Simmé, show that dusting with sodium sozoiodate is an effectual method of treating soft chancre. This substance has the advantage of being non-irritant, painless, odourless, and not staining the linen. The destructive stage of the sore does not last longer than thirteen days, and under this treatment neither œdema, eczema nor buboes are found to occur.—*Rev. de Thérapeut. Med. Chirurg.*, lxiii., 502, after *Thérap. Mod. Russe.*

Acetanilid in Chronic Suppurative Otitis.—Acetanilid is an exceptionally suitable antiseptic dressing in cases of suppurative otitis, as it is non-irritant, odourless, soluble in the discharge, and does not cake or form lumps. Somers, of Philadelphia, uses it mixed with boric acid in equal parts, taking care that the cavities are well cleansed before applying the powder. In every case treated, cure was complete in three months, even when the discharge had been chronic for twenty years.—*Glasg. Med. Journ.*, xlvi., 156, after *Med. News.*

Formalin in Ophthalmic Surgery.—Formalin, in 1 in 1000, or stronger solutions, where needful, has been well received in America and has given excellent results in the treatment of corneal ulcers, in conjunctival catarrh, in chronic conjunctivitis, in ulcerated lids, and in all cases where a germicidal antiseptic is needed. Burnett, Dufour, and many others give favourable reports on its action.—*Therapist*, vi., 66, after *Nat. Med. Rev.*

Sodium Monosulphide in Lead Poisoning.—From clinical observations, Peyrou concludes that the administration of sodium sulphide hastens the elimination of the poison in cases of saturnine intoxication; while the case is under its influence the excreta contain a markedly larger amount of lead. The urine passed during the day contains more lead than that excreted at night.—*Rev. de Thérap. Méd. Chirurg.*, lxiii., 460.

Warm Solutions of Cocaine.—Costa recommends that cocaine solution used for anæsthetic purposes should be first warmed to a temperature of 50° to 55°. These warm solutions, even when diluted to 1 in 200 or 1 in 250, give a very marked reaction; the effect is immediate, the insensitive zone is less diffused, and compared with cold solutions, the toxic effect is diminished.—*Répert. de Pharm.* [3], vii., 360, after *Gaz. deg. Ospedal.*

Calcium Chloride in Pruritus.—When given in doses commencing at 20 grains and gradually increased up to 40 grains, calcium chloride is found by Savill to exert a markedly beneficial effect in cases of general or local pruritus. The dose should be taken after meals, and the taste disguised by tincture of orange peel and chloroform water. Careful dieting, excluding sugar, sweets, and beer, and including very little meat, is necessary, as well as the medicine. Chloride of calcium thus given has effected cures where other remedies have failed.—*Lancet*, 2/96/300.

CORRESPONDENCE.

All Articles, Letters, Notices, and Reports intended for publication in the Journal, Books for Review, and communications respecting Editorial matters generally must be Addressed "Editor, 17, Bloomsbury Square, London," and not in any case to individuals supposed to be connected with the Editorial Staff. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

Any Instructions from Members, Associates, and Students of the Pharmaceutical Society, with reference to the transmission of the Journal, should be sent to the Secretary — Mr. Richard Bremridge,— 17, Bloomsbury Square, London.

Business communications—including advertisements, orders for copies of the Journal, and instructions from Subscribers respecting transmission of same—must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London. Cheques and money orders should be made payable to "Street Brothers."

Correspondents who wish notice to be taken of their communications must write in ink, on one side of the paper only, and should authenticate the matter sent with their names and addresses—of course not necessarily for publication. No notice can be taken of anonymous communications.

Drawings for illustrations should be executed twice the desired size; clean, sharp lines being drawn with a pen and liquid Chinese ink. Shading by washes is inadmissible. Photographs can be utilised in certain cases.

Names and Formulæ should be written with extra care, all systematic names of plants and animals being underlined, and capital letters used to commence generic but not specific names.

Reprints of articles cannot be supplied unless authors communicate with the Editor before publication.

Cutler's Dentifrice.

Sir,—Would some of your readers kindly give form. for Cutler's dentifrice? Mr. Cutler was practising in London some thirty years ago, and the prescription not unfrequently passed through my hands at the dispensing counter about that time.

Leamington, September 26, 1896. John Barnitt.

The Assay of Peroxide of Hydrogen.

Sir,—In the first place I beg to observe that my experience agrees with that of Mr. J. F. Brown, *Pharmaceutical Journal*, page 271, that commercial samples of peroxide of hydrogen are apt to become deficient in oxygen. Further, my experience has informed me that there is a distinction made by makers between "commercial" samples and "best" samples. For example, a ten volume commercial solution of peroxide of hydrogen will yield with an oxidiser ten volumes of oxygen, but a ten volume peroxide of hydrogen best will yield perhaps to an oxidiser forty volumes of oxygen. Again, there is a much simpler method of estimating peroxide of hydrogen than the laborious one described in the article of the 26th inst. It need not take us one minute to estimate a sample of peroxide of hydrogen. This method is published in the *Medical Times and Hospital Gazette*, August 31, 1895.

September 26, 1896. A Reader (59/26).

The Metric System.

Sir,—Referring to your annotation last week (p. 280) on a paper by Mr. Toms on the metric system of weights and measures, read at the British Association, he proposed that we should accept the metre, but divide it into eleven parts, ten of which would as nearly as possible be equal to our yard, and that this ten-elevenths of a metre should be accepted as a new yard measure, and be subject to multiples and divisions as at present in use. On this basis he suggested a system of weights and measures suitable for general use, and having a definite relation to the metric system. It was not, as you state, "too simple for me"; in fact, it was not simple enough, and therefore I opposed it on the ground that if we are to accept the metric standards, they must have decimal divisions and multiples, or there would be no advantage in accepting such a great change for our home trade. As a pharmacist I said that our weights used in dispensing were the most incongruous that could be conceived, the grain is not an aliquot part of an ounce, 437½ of one being required to make one of the other. The people would not endure such a system applied to coinage. Moreover, our smallest weight

and smallest measure, the grain and minim, bear no definite relation to each other, and as we have such potent medicines now to deal with, we require a more workable system to dispense them with accuracy. I suggested that the use of the metric system should be compulsory, say, in 1900. The difficulties to be overcome during a transition period are no doubt great, but I learnt from an American that in the States the metric system is making its way in pharmacy. In conversation in Liverpool, I was informed that engineers (not Sir F. Bramwell alone) were most averse to it. The practical Germans have got over the difficulty of its introduction, and with the help of the School Board we surely might surmount it within a reasonable time. Of course, the terms ounce, pound, and yard would continue in use for ages to come, but the approximate metric equivalents, in round numbers, would be legalised in all contracts, as has been the case in France.

New Cavendish Street, W., WM. MARTINDALE.
September 29, 1896.

"PRESCRIBING AND DISPENSING."

Sir,—After reading your interesting leader on above, especially a doctor's sneer respecting chemist's dispensing charges, I received the following initialled order from a doctor :—Chloride sodium, ℥j. Now, considering the doctor's wife was preparing his dinner at the time, I thought it odd he should prefer sending to an ignorant chemist when by just stepping across the hall of his house he could 'crib" the required quantity from the salt-box, that is, if the cook 'permitted such an intrusion. It put me in mind of sailors dying of thirst whilst their ship was afloat in fresh water.

September 26, 1896. SURPRISED (59/36).

ANSWERS TO QUERIES.

[*Queries addressed to the "Editorial Department, 17, Bloomsbury Square, W.C.," will be replied to in the Journal as early as possible after receipt, but the Editor cannot undertake to reply to them through the post, nor is it always possible to publish answers the same week. Questions on different subjects should be written on separate slips of paper, each of which should bear the sender's name or initials. Readers requiring working formulæ for special preparations, and intimating their wants to the Editor, will be assisted as far as may be practicable. The word "parts," when used in formulæ, invariably indicates parts by weight. Anonymous queries will be ignored.*]

CURLING FLUID.—Have you tried the formula given on page 80 of the present volume ? [*Reply to* "CRESCENT."—59/29.]

VAPOUR DENSITY OF ACETIC ALDEHYDE.—The vapour density of acetic aldehyde is 1·532. [*Reply to* "MAJOR."—59/17.]

PLANT RECOGNISED.—It is a specimen of *Parietaria officinalis* (Urticaceæ). [*Reply to* I. H.—59/35.]

DRINKING COCA WINE IN THE SHOP.—As the conditions under which the licence is granted only permit you to sell wines for consumption "off" the premises, it is evidently illegal to accede to a customer's request to afford him facilities for drinking non-exempted wines in the shop. [*Reply to* H. H.—59/16.]

SAUCE FERMENTING.—It is almost impossible to advise you unless we know the composition and process for your sauce. Possibly you do not boil it ; if not, you should do so ; if thoroughly boiled up for ten minutes, it should keep perfectly if you have sufficient vinegar present. It is well to bottle it off while hot. Boiling "sterilises" it and kills the organisms of fermentation. [*Reply to* H. L.—59/19.]

BOOKS ON ANALYSIS.—Allen's 'Chemistry of Urine' (Churchill) ; or Legg's 'Guide to the Examination of Urine' ; Wanklyn's 'Water Analysis' (Kegan Paul) ; and Wynter Blyth's 'Foods and their Composition and Analysis' (Griffin) ; or Pearmain and Moore's 'Analysis of Food and Drugs' (Baillière). Where two books are mentioned, the second in each case is smaller and less expensive. [*Reply to* "MAJOR."—59/17.]

QUANTITIES OF PLASTER FOR SPREADING.—These vary somewhat with the different plasters. Thus, it takes more "belladonnæ" than "plumbi" to cover a given area. Roughly speaking, about 1¼ lb. of belladonna plaster will cover one dozen skins 18 by 12 inches, or about 1 ounce 44 grains to the square foot. Machine spreading is more economical, and by this means you can get ten yards of plaster 16 inches wide out of about 2 lbs. of "belladonnæ." [*Reply to* QUÆSITO.—59/31.]

HEATING SUCCUS CONII.—Squire states that the alkaloidal strength of the juice is not affected by the evaporation ('Companion' Ed., xvi., p. 208). Cripps showed some years back that the hydrochloride of coniine is not volatilised (*Ph. J.* [3], xviii., 12). Farr and Wright also show that in careful drying of the fruits of conium no loss of alkaloid occurs (*Ph. J.* [3], xxiv., 188). This is probably due to the facts that the salts of coniine are practically non-volatile, although the free alkaloid may be so ; the succus is distinctly acid ; this may account for the non-volatilisation. It is a popular error to attribute the "mousey odour" of conium to the alkaloid, the strong smell given off by the juice or fruits during drying does not indicate loss of alkaloid. [*Reply to* H. H.—59/16.]

SPOILED GERANIUM OIL.—We fear you cannot do much with your geranium oil ; it must be very old to have gone off as you describe, for geranium oil of good quality is generally pretty stable. If you have much of it you might try redistilling it with water, or perhaps shaking it with a little zinc dust will improve it, but it is very doubtful ; you might also try washing with a little dilute solution of potash, and then thoroughly washing out the alkali, drying afterwards with anhydrous sodium sulphate. Do not heat the oil with the potash or you will decompose it still more. [*Reply to* W. G.—59/23]

PUBLICATION RECEIVED.

KIRKE'S HAND-BOOK OF PHYSIOLOGY. By W. D. HALLIBURTON, M.D., F.R.S. Fourteenth edition, with upwards of six hundred illustrations, including some coloured plates. Pp. 851. Price 14*s*. London : John Murray, Albemarle Street. 1896. From the Publisher.

OBITUARY.

MCCONNELL.—The death has occurred at Calcutta, on August 24, of Surgeon-Lieutenant-Colonel J. F. P. McConnell, Professor of Materia Medica in the Medical College, Calcutta. The deceased gentleman was a member of the Commission appointed by the Government of India some months ago to enquire into the desirability of the extended use of indigenous drugs in India.

CRUICKSHANK.—On September 19, John Cruickshank, Chemist and Druggist, of Macduff, N.B. Aged 75.

MARRIAGES.

LAING—GOVAN.—At 68, Argyle Street, St. Andrews, on the 25th inst., by the Rev. Dr. A. K. H. Boyd, George B. Laing, manager to Messrs. Anderson and Co, wholesale chemists, Junction Bridge, Edinburgh, to Kate Wallace, youngest daughter of the late Mr. Henry Govan, St. Andrews.

ROSE—CULVERHOUSE. — On September 23, at Christchurch, Brondesbury, by the Rev. J. C. Farmborough, uncle of the bridegroom, assisted by the Rector, the Rev. C. Dale Williams, Francis Rose, Pharmaceutical Chemist, Ramsgate, to Gertrude Emma, grand-daughter of the late John Culverhouse, of Burcott House, Brondesbury. Mr. Rose will be well-remembered by a large circle of friends and acquaintances as one of the most successful students and prizemen of the School of Pharmacy Session 1892-93.

COMMUNICATIONS, LETTERS, ETC., have been received from Messrs. Barnitt, Bird, Blythe, Guest, Hill, Knight, Lee, Matthews, Pickard, Prosser, Rose, Rusby, Shuttleworth, Smith, Storrar, Turnbull.

THE AIM OF PRELIMINARY EDUCATION.*

BY R. BRUDENELL CARTER, F.R.C.S.

Member of the General Medical Council.

I have been honoured by your President with an invitation to take part in the interesting proceedings of to-day, and to speak a few words to you with reference to the studies in which you will be engaged, and with reference to the manner in which they may most successfully be conducted. Fifty years ago, the pharmacy of the time was not unfamiliar to me; for I commenced my professional education as the pupil of a country doctor in large practice, who not only dispensed the whole of the medicines which he prescribed, but who prepared at home a large proportion of the officinal solutions, tinctures, pill masses, ointments, and so forth, which were required for use in his surgery. As a matter of principle, I entirely disapprove of the course which he pursued; for I think that the practice of medicine and the practice of pharmacy afford a proper opportunity for the division of labour, and that the two callings can be best conducted on strictly parallel lines, the characteristic of which is, as we all know, that they will not meet, however much they may be prolonged. In those days, however, the country doctor had very little choice in the matter; for the chemists' shops of rural towns and districts were seldom sufficiently well stocked, or even sufficiently well conducted, to be able to supply the demands of the medical profession. If we occasionally ran out of tincture of opium, or compound tincture of cardamoms, and were forced to buy in the locality, we could not fail to be impressed by the inferiority of any that we could obtain, when compared with what we were accustomed to make for ourselves. I am thankful to say that this state of things has practically ceased to exist, and that its disappearance has been the work of this Society, a work which it will devolve upon you, gentlemen, constantly to carry forward towards completion, and of which all who take part in it may be justly proud. I remember a time when it was almost necessary for every general medical practitioner to supply medicine to his patients, and I see that this necessity has in great measure passed away. I look forward to a near future in which it will have passed away entirely, and in which the members of our respective callings will habitually work together for their mutual advantage. The pharmaceutical chemists of the past and of the present have done their best to promote such a consummation, and it will devolve upon the pharmaceutical chemists of the future to finish what has been so well begun.

Purity of Medicines a Necessity.

I once met with a treatise on surgery, written in the reign of Queen Elizabeth, by William Clowes, who was surgeon to St. Bartholomew's Hospital, and a life-long friend of Sir Walter Raleigh, and who must, I think, in spite of the phraseology, strange to us, in which his wisdom was conveyed, have been one of the most sagacious men of his time. The concluding chapter of his book is written in doggrel rhyme, and contains general advice to "chirurgeons," among which I remember:—

> "And whoso setteth a time, when his patient shall be cured,
> Is but a foolish chirurgeon, you may be well assured."

Clowes goes on to explain that four things are necesary to a cure, namely, the grace of God, the skill of the chirurgeon, the purity of the medicines, and the obedience of the patient, and concludes:—

> "How then shall a chirurgeon name the time, day, or hour,
> When three things of these four be quite beyond his power?"

If we assume the grace of God to be an all-embracing requisite, in no way more necessary for surgery than for other occupations, you will see that Clowes puts the purity of the medicines in the second place, and that he confesses his own inability to secure it. Three hundred years have elapsed since he wrote, and his words are as true to-day as they were when they were written. The only difference is that a more exact knowledge of the action of medicines has rendered their purity even more important than at any former period, while the proceedings of this Society have rendered the requirement of purity, which I think we may understand as embracing generally the idea of good quality, comparatively easy of fulfilment. It is to you, gentlemen, that the medicine and the surgery of the future must be able to look with absolute and implicit confidence for the means of continuing those conquests over disease which have constituted one of the greatest glories of our time. The pharmaceutist who contributes his quota to the general result may fairly claim his share in the laurels and in the rewards of victory, and may feel, in the words of the apostle, that he is "a citizen of no mean city."

A calling which aims at such results as those which I have indicated is surely one that demands from all who follow it the devotion of their best faculties, whether of body or of mind, and demands also that these faculties should be assiduously trained for the better accomplishment of the work which lies before them. You are all required to pass an examination in certain preliminary subjects, the subjects of school studies; and I am glad to find myself in agreement with your President i the belief that it would be highly to the advantage of pharmacy in general if this Preliminary examination were gradually elevated as to its standard, and gradually widened as to its scope. Those of you who avail themselves of the opportunities and advantages here afforded, are either entering upon, or already engaged in, special courses of study, carefully devised by your distinguished instructors, and by the Council of this Society, as being those which are best calculated to confer upon you the peculiar kinds of knowledge which will be necessary in your future lives. On these latter subjects I will not presume to touch, because the little I ever knew about them has become rusty; but I will trespass for a while upon your indulgence while I invite you to consider in what way the benefits of your school teaching may best be supplemented and continued, and by what forms of exercise your minds may be best prepared for the recognition of truth and for the rejection of error. I am not quite sure that routine teaching accomplishes all in these directions that is possible or desirable; and, in the time of my youth, I was once irreverent enough to write an essay on "The Artificial Production of Stupidity in Schools." The circumstances of our time have a tendency to keep the coming examination, rather than the growth of the mental faculties, ever present before both the teacher and the pupil, and supply is only too certain to be governed by demand. An examination can always be passed, sooner or later; but the development of the mental faculties constitutes the difference between the blockhead and the philosopher. It is worth while for all of us to consider by what means we can depart most widely from the former type, and can approach most closely to the latter.

Development of the Mental Faculties.

If we regard the question from this point of view, I think it will become apparent that little will be gained by any kind of study which is not directed towards cultivating the power of observing with accuracy, and the power of judging with discrimination. As a rule, the leading idea of much school teaching seems to me to rest upon a belief which I cannot share, a belief that the introduction of compressed facts will mechanically expand the intellect. The proper object of construing is not only to impart the knowledge that certain Latin or Greek sounds represent certain English

* Inaugural Sessional Address to the Students of the School of Pharmacy, London, delivered on Monday, October 5, 1896.

ones, but also, and in a far greater degree, to produce and cultivate a habit of careful attention to the meaning of words. The proper object of mathematics is not only to impress the memory with the fact that the square of the hypothenuse is equal to the squares of the sides that contain the right angle, but also, and in a far greater degree, to accustom the mind to a high standard and to a certain kind of reasoning, and so to render it distrustful of inaccuracy or incompleteness. The proper object of arithmetic is not only to confer the power of working sums in the Rule of Three, but also to lead to the comprehension of the principles of proportion. And so, when we seek the best preliminary education for the members of such a calling as that which you have chosen, a calling which requires a combination of practical business aptitudes with a power to understand and apply the truths of science, we can only take for the purpose the studies which lie ready to our hands, such as the dead and living languages; and of all languages the English, in which our ideas are formed, and in which chiefly they must be imparted; mathematics and physics, together with the indirect culture to be obtained from the topics of the day, from the personal tastes, and from the floating information of the family circle. The results to which all these should lead are of a far more important character than any fleeting or superficial proficiency in the studies or pursuits themselves. The aim should not be to make profound scholars, or great geometricians, or deeply-learned physicists, but to use scholarship, and geometry, and physics as agencies for the development of the powers and qualities of mind which will be most useful to the student, and which will best qualify him to tread his appointed path with diligence and with success. These may, I think, be stated somewhat in the following order. First, the power of careful observation, the power of searching for and recognising facts, so as to obtain trustworthy materials for the operations of the judgment. Secondly, the faculty of imagination, by which to link together the known and the unknown. Thirdly, the power to maintain a suspended judgment wherever certainty is unattainable, the power to say to oneself, and, if necessary, to others, "I don't know"; the confession of ignorance being the first step towards the attainment of knowledge. Fourthly, and perhaps pre-eminently, the love of truth. No man can rightly discharge the duties which you will owe to society, unless the love of truth be conspicuous among the qualities of his moral character, or the duties which you will owe to science, unless it be equally conspicuous among the qualities of his intellect.

The Effects of Public School Teaching.

The method of education which has given England the majority of her greatest men, the old method of public school and university teaching, was no doubt reponsible for a certain proportion of very imperfect success, but it accomplished one thing which it may be desirable to remember. A young man thus educated, if he knew anything at all, would know the Latin language thoroughly and completely, alike in its construction and in the meanings of its words. To know some language thoroughly and completely is the first essential of mental training, without which there can be very little real education, and very little power of accurately knowing anything else. At the recent meeting of the British Association for the Advancement of Science, Professor Flinders Petrie maintained, with considerable ingenuity, that ideas are independent of the language in which they are expressed; and, no doubt, this is true to some extent. Dumb animals clearly form simple ideas, and are guided by them in their conduct; but I think it is equally certain that no complexity of thought is possible without the aid of language, and hence that an imperfect acquaintance with language implies the imperfect formation of any but the most rudimentary ideas. The Preliminary examination at present required by the Society does not imply a thorough mastery of Latin, and hence it is all the more important, as a chief element in Paley's definition of education as "every preparation which is made in our youth for the sequel of our lives," that you should strive to attain a thorough mastery of English, which is of as much educational value as, and of far more practical utility than, a corresponding knowledge of Latin, because you will have to learn and to conduct your business in English. In order to learn the business thoroughly, and to conduct it intelligently, it is essential to know the language in which its facts and principles are conveyed, to know the precise meanings of common words, so as not to be liable to misuse or to misunderstand them, and to know the proper connections and relations between the successive clauses of sentences, so as to express meaning coherently. These accomplishments are far less common than might be supposed, not because they are specially difficult of attainment, but because the acquirements by which they are afforded are less widely diffused, even among schoolmasters, than they ought to be.

The Misuse of Words.

Not many years ago, in connection with circumstances which directed attention to one of the greatest of our public schools, the head master thereof, who is now a bishop, thought fit to write a letter of explanation to a newspaper. Finding that his letter had provoked unfavourable comment, he applied to a friend of some literary skill, and asked what fault could be found with it. "I could hardly explain," was the reply, "but I will try my hand at translating it into English." I once heard a reverend schoolmaster preach a sermon, in the course of which he said "the higher we advance." He was by profession a teacher not only of boys, but of men and women, and yet he was unable to express himself clearly. He did not know the simple meanings of the common words he used. He did not know that, although we may rise "higher," we can only advance "farther." I have lately seen in print some instructions for the guidance of nurses, which, among other curiosities, contained the following passage:—"The nurse should always change her dress before leaving the sick room (which should be of cotton)." The author quite possibly meant that the dress should be of cotton, but he did not know how to say so. In the present year, in a published paper which has been read before a scientific society, a case is described as one of fractured bone in "a young subject resulting from disease"; while in another paper in the same volume the writer not only employs the meaningless American coinage "reliable," but, in the next page, surpasses himself by using "unreliable." In what manner it would be possible either to "rely" a thing or to "unrely" it, and what would be the effect of either operation, he, although presumably a man of science, did not condescend to explain. But his error is sufficiently common to excuse me for reminding you that, in English, words with the termination "able" can only be formed from active verbs, and that "to rely" is a neuter verb. The affix "able" is equivalent to placing the phrase "that can be" before the past participle. Thus, a thing that is commendable is a thing that can be commended; a thing that is allowable is a thing that can be allowed, and so of all other examples of the construction. "Reliable," therefore, if the word existed and meant anything, would mean "that can be relied," which is nonsense. We do not "rely" things or people; we rely upon them, not seldom to our detriment. In like manner, ignorant or careless persons talk and even write about being "under" circumstances, not knowing, or not reflecting, that "circumstances" are "things that stand around," and that it is not possible to be "under" them. If we were under them they would cease to be "circumstances."

Within the last week, in quite a respectable newspaper, I saw a

statement that some recent weather had been "phenomenal," and I could not help wondering what the writer fancied he meant. "Phænomenon" is a Greek word which was anglicised, in the first instance, by writers on natural philosophy, and it means a visible occurrence, something that happens and that can be seen. An eclipse of the sun is a phænomenon; so is the appearance of dew on a summer evening; so is the unfolding of a flower; so is the falling down of a precipitate when a reagent is added to liquid in a test-tube. The word conveys nothing as to the quality or character of the appearance, and, in order to do this, the addition of an adjective is required. But, partly, perhaps, because the word was first brought into use by philosophers, whose pursuits were by the vulgar believed to be recondite, phænomenon was supposed by ignorant people to mean something remarkable, unusual, or even stupendous. A showman, who probably could not spell the word, would exhibit an "Infant Phenomenon" in the shape of a diseased, or deformed, or precocious child; and a writer of fiction would describe one of his characters as "a phenomenon of ugliness" or "a phenomenon of vice." Lastly, it befell that someone, I think Coleridge, coined the adjective "phænomenal," which would really mean "apparent," and nothing else, but which he used in the sense of "relating to phænomena." Our penny-a-line writers of to-day use it in the sense of extraordinary or stupendous. These things may seem trivial to some; to me they seem of high importance. The growth and progress of all knowledge are indissolubly connected with the precise and accurate statement of facts and inferences; and knowledge can only be either acquired or extended by those who are acquainted with the meanings of the words they use. The thoughts of a philosopher cannot be expressed in the phraseology of a charwoman. Insistence upon this point is the more necessary, since not only in a large number of modern publications, but also in much that passes muster for conversation, accuracy of expression is habitually sacrificed to current slang or to fancied picturesqueness. Mr. Bellows, in his admirable Pocket Dictionary of French and English, explains for French readers the meaning of the word "awful," and adds that this word has come into general misuse in the slang of the vulgar rich, among whom it fills the same place that another offensive word, a contraction of the mediæval oath "By'r Lady," fills among the vulgar poor. Fifty years ago such blunders as those which I have been describing were of rare occurrence, because young people who wished to read were practically compelled to read literature, and to form their style upon good examples, among which would be prominent the English Bible and the English Liturgy, those noble monuments of perfect composition.

In this respect, times have wholly changed. It was lately my habit to come daily to London from a suburb by train, and many of my fellow passengers were accustomed to read upon the journey. The elder men usually had papers bearing upon their respective businesses, but the young men seemed to read for amusement, and I never saw one of them reading anything which a reasonable person would stoop to pick out of a gutter. The tendency of feeble novels, of inferior newspapers, and of hasty and ill-considered publication generally, is to encourage a slipshod use of language which must be fatal to accuracy; for it is as impossible to nourish the intellect upon mental food of this description as it would be to nourish the bones and muscles upon a diet of water-gruel. The only method of overcoming the evils referred to is by such a systematic study of English, as it has been used and perfected by its greatest masters, as may at least be sufficient to confer the power of recognising imperfection and incorrectness. There is, of course, a question of taste involved, which it would be foreign to my purpose to discuss; my sole object being to lay stress upon the fact that a student of science, whether pharmacy or any other, cannot be a successful student unless he learns how to obtain clear, exact, and definite ideas, and how to give utterance to them in correct, simple, and intelligible language. He should strive to realise Cobbett's beautiful description of an English sentence, that it should be "as clear as a pebbled brook, and not only not liable to be misunderstood, but not capable of being misinterpreted." I feel very strongly, gentlemen, that you can acquire nothing which is more important, or which is more certain to be valuable, than the power of saying or writing precisely what you mean, and the power of perceiving the exact meaning of whatever you write or say. Whoever can do these things, is secured against muddle-headedness for the remainder of his life. He will not advertise for "a perfect lady's horse," nor yet for "a bedroom for a single gentleman twenty-one feet long by fourteen wide."

Prevailing Ignorance of English.

In my own profession, and I believe in some others, the prevailing ignorance of English is the chief cause of the multiplication of monstrous and often meaningless compounds, misbegotten of classic tongues, for the imperfect or inadequate expression of ideas which our own language would convey with perfect clearness and with perfect accuracy. The nomenclature of chemistry is terrible to the uninitiated; but I am given to understand that it is, in fact, not only orderly, but descriptive; composed upon a definite system, and capable of imparting much important information to those who have once obtained the clue to its mysteries.

You may perhaps think, and with complete justification, that the advice which I have ventured to offer might be more useful if it were more detailed, and if I said something about the way in which self-education in English may be best combined with the studies necessary to your calling. If I may speak from my own experience, I should say that the commencement must be through careful attention to grammar, and to the right construction of sentences; and, at most schools, this study, in so far as it is pursued at all, is apt to be rendered artificially repulsive. It forms the main subject of one of the most delightful books in the language, Cobbett's English grammar, the only fault of which is that there is not more of it, and which, if you once begin to read, you will not willingly lay down. Cobbett teaches less by rules than by examples; and, after you have read his work, many common errors of construction will no longer seem possible to you. The next step, I think, is to practise the art of writing answers to questions of such a kind as will be likely to fall to you in some of your coming examinations. As a student, it was my custom to procure the questions which had been set at the London University, and to write answers to them, first reading up the subject of each question in such books as I could procure, and afterwards comparing my answers with the authorities, and carefully scrutinising the correctness of composition. The next rule, I think, should be never to use a word unless you are quite certain that you know precisely what it means, and never to use a word which does not mean precisely what you want to say. For this purpose you will require a good dictionary, one, if possible, which will give you something of the history of any word about which you may be doubtful, with examples of the manner in which it has been employed by good writers. The original Johnson's dictionary, a copy of which can often be picked up cheaply at a bookstall, you will find to be of great utility; and although many words have been introduced into the language since its date, I am inclined to think that the resources of English were already ample when he wrote, and that the great majority of

modern coinages can be dispensed with by those who are familiar with the tongue of Shakspeare and of Milton.

If ever you cannot think of a word which will express your precise meaning, there is no more useful book of reference than Roget's 'Thesaurus of English Words and Phrases,' in which words are classified with reference to the ideas which they convey, and in which, given the idea, the most appropriate word will often be discovered. When any question of a shade on meaning is involved, much valuable information may generally be obtained from Crabbe's 'Dictionary of English Synonymes.' The course of study which I have shadowed forth need not consume time which ought to be devoted to your special work, and it will render that work more easy and more satisfying than before. It is not difficult to remember what is really understood, it is very difficult to remember correctly what is understood imperfectly. And again, apart from this consideration, although it is by no means an unimportant one, the habit of careful attention to the meaning of words will unfold to you new beauties in the pages of the great masters of literature, and will enable you to turn to them with ever new delight. This alone is a gain not only worthy of consideration, but worthy of being worked for and waited for. Matthew Arnold wisely said that conduct formed nine-tenths of life, and it is certain that good literature is the chief means through which human nature and the laws of conduct are rendered intelligible to us. I would, therefore, strongly urge upon you, gentlemen, that you devote your best energies to obtaining a thorough knowledge of your own language, and of the writings of those who have made that language what it is; and I feel safe in predicting that, if you will do this, whatever other acquirements you may seek will be comparatively easy of attainment.

PHARMACISTS AS PUBLIC MEN.*

BY DAVID STORRAR, KIRKCALDY.

As you are all aware, it was hoped that the President of the Pharmaceutical Society would present the prizes and deliver the Inaugural address on this occasion, but, unfortunately for me, and still more unfortunately for you, his numerous engagements prevent him from being with us to-day.

In common with you all, I regret the absence of the President, who would have filled this position so gracefully and efficiently, and I appreciate very highly indeed the honour you have done me in asking me to take his place.

As an unexamined—although, I hope, not an unqualified—man, one who is very conscious of being, in no sense of the term, a scientific chemist, and who would fall a very easy victim to the Board of Examiners, it puzzles me to know why I should have been selected. That, however, is your affair. Mine is to consider upon what subject I should address you, what extracts I can make from my meagre store of knowledge which would be of interest and benefit to the students I see before me.

And the first thing that suggests itself to me is to congratulate you very sincerely upon your having an organised pharmacy school to attend—that you have at your own doors the means of study and the opportunity of qualifying for the examinations.

We provincials envy you this privilege. To, probably, three-fourths of the apprentices and assistants in the kingdom the only schools readily available are the back shop and the dispensing counter. And, let me say, that these still form, and will continue to form, the best training schools for the young pharmacist. There and there only, under a good master and aided by private study and intelligent interest in the subject, can he lay down that foundation of practical knowledge upon which the superstructure of a competent pharmacist can alone be built up. Long may the system of apprenticeship continue, as no system of theoretical training—school training—can ever fill its place. Something more, however, than purely practical training is needed to meet the requirements of the modern Board of Examiners, and that something is classes such as you have here. I am very pleased to know that these classes have been so helpful to many in the past, and that last session was the most successful of all.

The inception of these classes was due, I believe, to the young men of Sheffield themselves, but for their establishment upon an efficient and, I hope, permanent basis you are indebted to the loyalty and generosity of the local Society, and to the fact that you have been fortunate enough to secure gentlemen as teachers who give their services more for love of the work than for hire.

These facts ought to be a stimulus to the students in their work and cause them to resolve that no effort shall be spared on their part to make the Sheffield School a distinct factor in pharmaceutical progress and efficiency.

To secure this you must cultivate an efficient method and have a distinct aim in your work. In regard to method I need say little. That is the province more of the teacher than the taught. So far as you students are concerned, advice as to the manner of your study may be summed up in a few words. It should be systematic and thorough, carried on with a determination to succeed, and, above all, with a resolution to acquire an interest in the subject for its own sake, which is sure to come if it is not there to begin with.

If you do not find a certain pleasure in your work for its own sake, if you cannot get up a ufficient interest in it to make you forget that it is a task, give it up and try something else than pill rolling for a livelihood.

The main thing, however, in connection with your study is its aim. If the goal is kept in view, any road will bring you to it, although one may be shorter and better engineered than others, and so have fewer gradients. Don't try doubtful and unfamiliar short cuts, as they are proverbially the longest roads in the long run.

Possibly the motive which induces the large majority of pharmaceutical students to join classes such as yours is the desire to qualify for the examinations, and it is only natural that it should be so.

An unregistered man nowadays, however well he may be qualified practically, commands a very low price on the market as an assistant, and finds the door shut against him from getting into business on his own account, unless he enters by that "other way" provided for him by the Limited Liability Act, which way, I need scarcely say, no self-respecting man can take.

A certain number of students no doubt take classes for the purpose of increasing their knowledge for its own sake, and it is to be hoped that this class of student is largely increased from the other as the session goes on. It is well that this is so. As a trade, as a money-making profession, pharmacy has little to offer, and that little appears to be growing less every year. But, as a distinguished ex-President of the Pharmaceutical Conference has said, "if we make gold or personal fame the standard and goal of our lives, then I think pharmacists as a class have fewer opportunities than most men to realise them, but if we prefer the possession of a cultured mind—which in the exercise of our daily work is brought into contact with the greatest men who have ever lived and written upon the deepest subjects of precise knowledge—then pharmacy does indeed afford us the opportunity."

Yes, pharmacy, although not a money-making, is an honourable, interesting, and useful calling, which gives ample and varied opportunity for the discovery of Nature's secrets. As a trade it is petty,

* Inaugural Sessional Address to the Students of the Sheffield School of Pharmacy, delivered on Thursday, October 8, 1896.

but as a profession it treads closely upon the heels of medicine, and has included in its ranks many men to whom "the world has done reverence."

Let one of your resolutions therefore be to sustain the reputation of this honourable calling which you have chosen.

But while a young man's first duty is undoubtedly to equip himself for his own particular work, to stop there would be a limited aim in life. He should look forward to and fit himself for doing some public work also. I do not mean by this that when he gets into business he should be a noisy politician, that he should try to be a member of every public board in his town or district, or that he should be more often seen on public platforms than in his own shop.

This type exists, no doubt, but is much less common than the other, in which the man buries himself in his business and will have nothing whatever to do with public matters. It is to be regretted that the keen competition of the present day—the necessity which exists for every effort being made to hold one's own in business—gives some excuse for this policy. It is a mistaken and selfish policy all the same. It is for our own benefit, as well as for the public interest, that we should do our own share of public work. We have many examples in our own ranks, and I believe in this town, of men who are successful and distinguished pharmacists, and who are at the same time doing good public service to the communities in which they live. But there are others who not only shirk their duties as citizens, but do not even take their share of the general management of their own trade guilds.

How few, for instance, of the registered chemists in this country take sufficient interest in general pharmaceutical politics as to join the Pharmaceutical Society or even any local society? The only share in pharmaceutical work which a large proportion of our brethren takes is to criticise the action of the Council, or block the progress of any Amendment Bill which may be promoted. It is true that many of these men have panaceas for all the ills which pharmacy is heir to; but, unfortunately, most of these are unworkable, and nearly all of them unattainable.

It is lamentable to think of the stream of pharmaceutical wisdom which runs to waste in the correspondence columns of the trade journals. The energy displayed there would, directed in a right channel, be of infinite service in driving the pharmaceutical mill, but employed as it is, is simply wasted. Even although experience has taught me that it is entirely useless, I should like to repeat what has been so often said before, that although the policy and action of the Society has been at times mistaken, it has been honest, and for the benefit of the trade generally. This is seen at once if we compare the position of pharmacy now with its position before the institution of the Society. To remain outside and criticise its policy is folly so long as the door is open to enter the Society and control that policy. There is no doubt that, speaking broadly, it is the outside members of the trade who have blocked such progress as could be secured by further legislation, as until we have unity of purpose amongst ourselves, we cannot expect the State to aid us. Can I venture, therefore, to inflict one other advice upon you young men, and upon those older men present to whom it may apply? Connect yourselves with the Society at the earliest possible moment, and keep up that connection. The Pharmaceutical Society is the only trade society which can live, and the direction of its policy is in your own hands.

What that policy of the future should be is the question of the day, pharmaceutically, and no question should be of more interest to you students, as to you the future belongs. That something is rotten in the state of pharmacy is evident; that, acting under a badly drawn Bill, through which the proverbial coach and four has been driven, we have neither free trade nor protection, and that legislative amendment of some kind is required is admitted by all. But the question upon which great difference of opinion exists is what direction should that amendment take?

As has been said, "No fewer than eight attempts have been made to draft a Bill, and yet we have not succeeded in getting a single Act passed. The inertia of those outside the Society is not entirely to blame for this; there has been a want of clearly-defined aim on the part of the leaders of pharmacy." With this statement I entirely agree, although I cannot so entirely agree with the remedy proposed by the writer.

To me it appears that the want of aim referred to is caused by a failure as yet to diagnose the disease from which pharmacy is suffering—a failure to spot the "anti-pharmacy microbe" which is doing all the mischief. That mischief has been attributed to over-legislation and under-legislation; to the Limited Liability Act and over-competition in our own ranks; to stores and illegal—or rather what we consider illegal—opposition, and the want of protection therefrom, which many think we ought to secure in return for the qualification required from us; and the remedies suggested are as varied as the symptoms. They range from free trade to the confining of all dispensing of drugs to registered men, the remedy most insisted upon being higher education and the stiffening of the examinations.

With all humility and all due respect to the higher authorities, I question very much whether the main difficulty in the case has been yet recognised, and if this be so, any of the remedies proposed will be of small avail.

What we have been trying to do is to reconcile the irreconcilable; to run what is essentially a trade upon professional lines. That there is a professional side to pharmacy is undeniable, and to foster professional feeling and behaviour in our ranks is good policy, but it cannot be done at the expense and without the consent of the trading element, without strong and just opposition.

Trade is an honourable calling, and trade in drugs is no exception. Many of our brethren aspire to no higher than a trade knowledge of their wares, and although we may regret this, we cannot fight against it without raising up an opposition which will defeat the object aimed at, and without playing into the hands of limited companies, from whom the law demands no special knowledge of any kind so long as the few scheduled poisons which they sell are sold by registered men.

This, it appears to me, is the crux of the whole matter. Before we can go for amendment of the Pharmacy Acts with any chance of success we must face up to and settle whether the practice of pharmacy in the future is to be conducted on the old lines or on new that is, on the lines laid down in Ireland and in most Continental countries, where profession and trade are roughly separated into dispensers on the one hand and retailers of drugs and chemicals on the other. If we decide to continue on present lines, then surely the compulsory examinations at present in force are stiff enough with the exception of the Preliminary, which is much too meagre a preparation for the subsequent qualifying examinations. Higher qualifications taken voluntarily might be encouraged by giving certain privileges or titles to those who acquire them, but any general stiffening of the examinations might prove a serious danger to the craft, if not to the public. That the demand for higher education is not increasing is shown by the steadily decreasing proportion of candidates who go in for the Major, and I am sorry to say that this is specially the case in Scotland.

If this is the result at present, what might be the effect of raising the standard still higher? Might it not be to prevent many in the trade going in for examination at all; might it not have the effect of crushing out of many all ambition to rise in their profession, and make them, perforce, contented to be hewers of wood and

drawers of water to their more ambitious brethren? Should this be the result, as appears highly probable, it would be a distinct injury instead of benefit to the future of pharmacy.

Speaking not as a Member of Council, but as a private individual, and, I can assure you, with extreme diffidence and hesitation, I venture to suggest that further progress towards a better recognised and more assured position for pharmacy on present lines is well-nigh impossible. Higher education, a more strictly professional training, is not in demand, is not even absolutely required in some departments of our existing trade. A Major man looks and is out of place in handling sponges, perfumes, and toilet soaps, paints, sheep-dip and patent medicines, which, along with the hundred and one etceteras, go to form the bulk of the average chemist's turnover, and in many cases the main source of his income.

Would it not be more logical and tend to a speedier and more satisfactory settlement of the many questions which cause difference of opinion amongst us, were we to recognise and openly acknowledge the dual element in our trade rather than shut our eyes to it?

I am quite aware that what I suggest practically exists already. That no restriction is placed upon the sale of any drug or chemical unless it is included in the poison schedules. But something better than this is aimed at by our leaders; something more than the exclusive sale of a few scheduled poisons is required to give that position to the practice of pure pharmacy to which it is justly entitled.

In any legislation, of course, existing rights must be respected, but what difference should be made in the future between the two classes; what privileges should be conferred upon the one (in return for higher qualification) and withheld from the other, I am not prepared to say. In the settlement of that the safety of the public must be considered more than the interests of a class. I can only suggest that the Irish Pharmacy Act be taken as a basis upon which to work.

These suggestions I have brought forward are neither novel nor original, but this is the first time, so far as I am aware, they have been publicly made. They have occupied my thoughts for some time, and appear to me to contain the germ of a possible settlement of the future of pharmacy in this country. I give them for what they are worth as a contribution to the discussion of a subject which has engaged the attention of pharmacists for years. Whether the remedy I have suggested is applicable or not I leave to wiser heads than mine to determine: my object will be served if I have succeeded in convincing any of you that the real difficulty lying at the root of the matter, and which has prevented any Pharmacy Bill amendment, is that hitherto we have been trying to legislate for a house divided against itself.

One thing is clear. We cannot stand still, and must be progressing if pharmacy is to take that place amongst the professions which it ought to take, or even keep the position which it at present holds. And the only road to reach that end is the educational; the only lever, higher training. Can we make that advance on present lines?

I am afraid that I have wearied you by my sermonising, and have to thank you for the patience with which you have listened to me. In conclusion, will you allow me to say once more how pleased I am, and all interested in pharmacy are, to see springing up here, and in other provincial centres, evening classes to help on the study of our profession. Take full advantage of the teaching you receive here. Let your object be education not cram; a provision for future use, for future advancement in the knowledge of your craft, and not simply a means to assist you in scraping through the examinations. Education will carry with it its own reward by making you not only better pharmacists, but better citizens and better men.

To aim simply to acquire a good knowledge of your business, and be successful tradesmen is a comparatively poor ambition. You are capable of something much higher than this; something which you may reach although you remain struggling tradesmen all your lives. You remember, perhaps, the epitaph which expresses a great deal in a few words: "Born a man—died a grocer." Let your aim be to fit yourselves for honourable useful lives, to be spent, not only in forwarding your own interests, but those of your neighbours, so that you may leave the world a little better than you found it.

In the words of my own little country's national poet:—

To catch dame Fortune's golden smile,
Assiduous wait upon her;
And gather gear by ev'ry wile
That's justified by honour;
Not for to hide it in a hedge,
Nor for a train attendant;
But for the glorious privilege
Of be'ng independent.

The fear o' hell's a hangman's whip
To keep the wretch in order;
But where ye feel your honour grip,
Let that aye be your border;
Its slightest touches, instant pause—
Debar a' side pretences;
And resolutely keep its laws,
Uncaring consequences.

In ploughman phrase, "God send you speed,"
Still daily to grow wiser!
And may you better reck the rede,
Than ever did th' adviser.

NOTES AND FORMULÆ.

Ink for Writing on Glass.

Take 20 parts of brown shellac, and dissolve in the cold in 150 parts of methylated spirit; dissolve 35 parts of borax in 250 parts of distilled water; then slowly pour the shellac solution in the borax; the mixture may then be tinted to any colour by adding a solution of a water soluble dye, for instance, violet, with 1 gramme of methyl violet. This ink is said to be indelible, and to allow the marking of bottles without having recourse to labels, which are so readily destroyed.

Eucalyptus Tooth Paste.

Precipitated chalk, 160 parts; powdered soap, 45; wheat starch, 45; carmine, 1; oil of peppermint, 2; oil of geranium, 2; oil of eucalyptus, 4; oil of clove, 1; oil of anise, 1. Mix, and mass with equal parts of glycerin and alcohol.—*Pharm. Post.*

Eucasin.

A combination of casein with ammonia, to which the name eucasin has been given, is a fine white powder entirely soluble in warm water. It is put forward as a dietetic substance similar to somatose.—*Bull. Commerc.*, xxiv., 226, after *Pharm. Post.*

Hydrated Sodium Salicylate.

Romyn finds (*Ned. Tydschr. Pharm.*) that when sodium salicylate is dissolved in its own weight of water, after a lapse of time it deposits large prismatic crystals showing double refraction and containing six molecules of water. If crystallisation does not readily set in, it may be started by introducing a crystal from a previous experiment. The crystals rapidly effloresce, and water is quickly expelled on drying at 8°.—*Journ. Chem. Soc. Abstr.*, lxx., 550.

THE PHARMACEUTICAL SOCIETY AND ITS HOUSE.

Nos. 15 and 16, Bloomsbury Square.

THE SOCIETY'S PREMISES.

It may be said that the Pharmaceutical Society was conceived amid tea, and born in the presence of stronger stimulants, for the first definite steps towards founding it were taken at a tea-party given at Jacob Bell's house in Oxford Street, on March 20, 1841, whilst it was at the "Crown and Anchor Tavern," in the Strand, on April 15 following, that it was formally resolved to constitute a permanent association having for its object the union of the members of the trade into one body.* Beginning on May 11, 1841, there followed a series of monthly pharmaceutical meetings —which were ostensibly meetings of the Society—at Bell's house or on the premises of the Society of Arts, in the Adelphi. The rooms were always crowded, and the meetings continued to be similarly held until January 12, 1842, whilst meetings of the newly-appointed Council and Committees were held at the houses of members of Council — that of Jacob Bell, 338, Oxford Street; of Richard Hotham Pigeon, 31, Throgmorton Avenue; or of Charles James Payne, St. Martin's Lane.

But the necessity of a fixed abode for the entity now become well-known to chemists and druggists as the Pharmaceutical Society of Great Britain soon became manifest, and the following advertisement was published in the *Times* for Friday, September 17, 1841:—

> WANTED a LECTURE ROOM, capable of containing from 100 to 200 persons, with other suitable accommodation, situate between Temple-bar, Soho-square, and Charing-cross. Applications to be made, post paid, to Mr. Churchill, medical bookseller, Princes-street, Leicester-square.

The actual result of the numerous inquiries made was the selection of No. 17, Bloomsbury Square, as the future headquarters. The Secretary, George Walter Smith, entered into residence, a Council meeting was held in the house on January 6 and a meeting of the Society six days later, when an address by the first President—William Allen—was read in his absence by the Vice-President, Charles James Payne. The attractions of the "Crown and Anchor," or perhaps insufficient accommodation at "the Square," led to the first annual meeting of the Society being held at the tavern in the Strand, but henceforth No. 17, Bloomsbury Square, was the centre of all the Society's activity.

At the outset some of the rooms were occupied by two tenants, and in addition to a residence for the Secretary, accommodation was also reserved for the Council and Committees, office, library, museum, and school, but little progress had yet been made towards adequately fitting and furnishing the house for these manifold requirements. The private apartments of the Secretary were originally in front of the house on the second floor; the Museum was a front room on the ground floor, still retained for its original purpose; and the Council Chamber and Library was the room on the first floor now known as the Hanbury room, occupied by the Curator, Mr. E. M. Holmes. The lectures were delivered in what is now the Histological Laboratory, and the Secretary—after using his sitting-room as an office for a time—became installed in the room at present occupied by the Editor.

A students' laboratory on a small scale was fitted up on the second floor, immediately over the Council Chamber, and Redwood had a private room adjoining. As demands for benches increased it was

Richard Bremridge.
Secretary and Registrar.

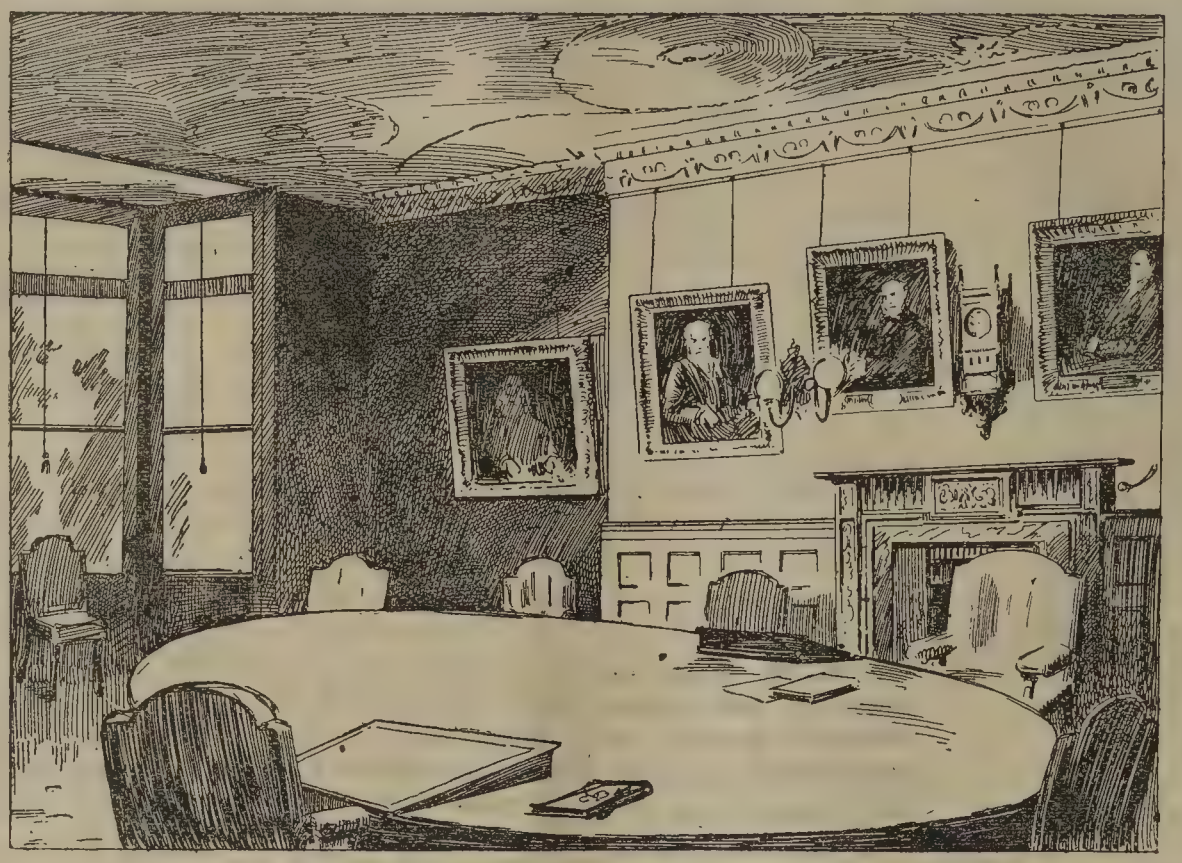
Edward Morell Holmes.
Curator.

John William Knapman.
Librarian.

Officers on the Pharmaceutical Society's Permanent Staff.

* At this meeting a resolution—moved by William Allen, F.R.S., and seconded by John Bell, of 338, Oxford Street—was unanimously adopted, to the effect "that for the purpose of protecting the permanent interests, and increasing the respectability, of chemists and druggists, an association be now formed under the title of the Pharmaceutical Society of Great Britain." Nearly one hundred signatures to a declaration of membership of the newly-born Society were obtained at the close of the meeting. The first regulations for the government of the Society were submitted and formally adopted at a public meeting of the members, held at the "Crown and Anchor" on June 1, 1841, when William Allen was elected president; Charles James Payne, vice-president; Richard Hotham Pigeon, treasurer; George Walter Smith and Robert A. Farmar, joint honorary secretaries. By special resolution, the "Watch" committee of forty members which had conducted the necessary preliminary arrangements became the first Council of the Society, and in May following the Council of twenty-one members was elected for the first time as at present

found necessary to cover in the yard at the back of the premises and fit up the large educational laboratory described in a previous article (see p. 222). In the adjoining store-room on the basement level the students of that day were wont to divert themselves at times. The room immediately behind the Museum, and partly over the Laboratory, was also utilised as a store-room. Years afterwards when the receipt of Bell's legacy enabled the Council to construct a large new laboratory at the top of the house, this store room and the old laboratory were thrown into one and became the lecture theatre of to-day. Before this could be accomplished, however, it became necessary to take in the house at the corner of Bloomsbury Square and Great Russell Street. This afforded ample space for every purpose, for the time being, and a general rearrangement of the premises took place. Thus, the old lecture room on the first floor became the chief examination room; the room immediately behind, after serving as Library and Council Chamber, was utilised in turn as an extension of the examination room; the Library migrated to its present position; and the Council began to meet in what is now the Hanbury Library, overlooking Great Russell Street.



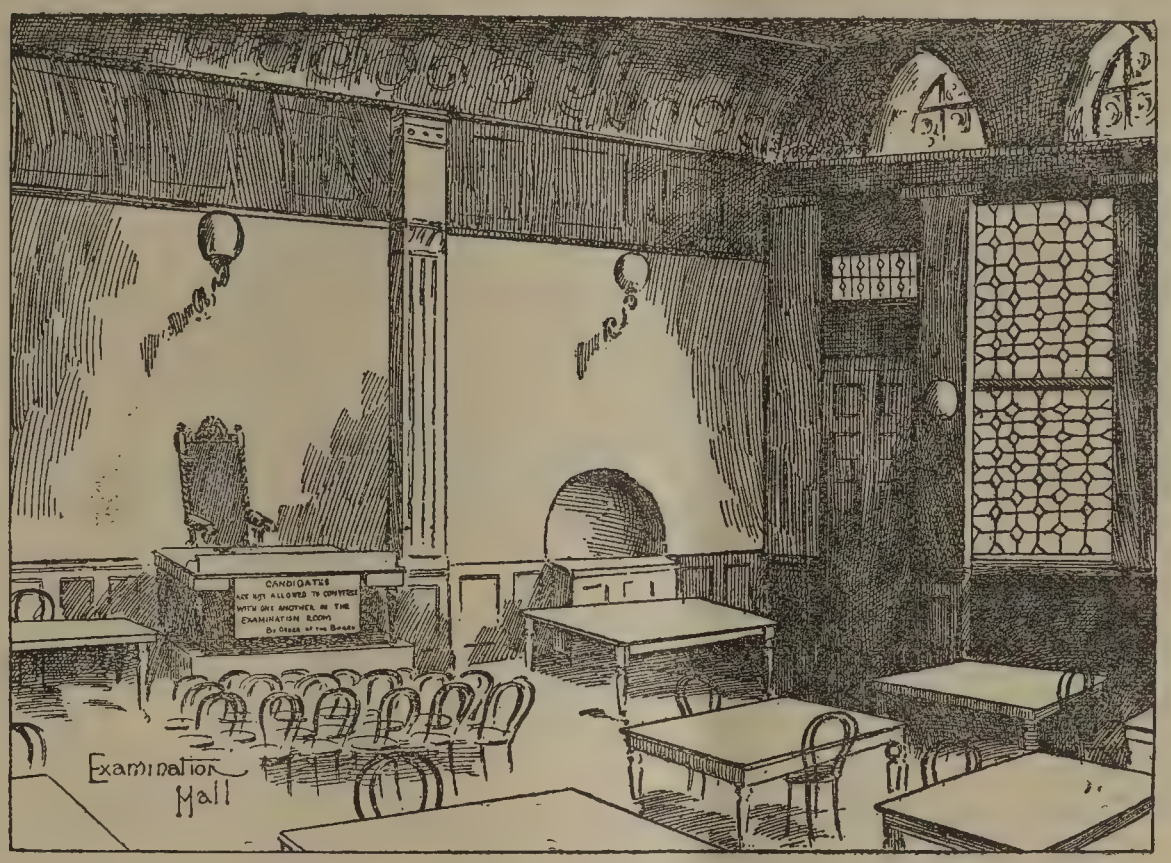
COUNCIL CHAMBER.—VIEW FROM DOOR.

Thus matters remained for a number of years, but with the addition of Nos. 15 and 16, Bloomsbury Square, and the erection of the new examination hall in Galen Place (Old Pied Bull Yard) came further changes in the older premises. Thus, the removal of the Council Chamber to No. 16 allowed for a much-needed extension of the Library, the examination rooms were replaced by the Reference Museum (now also the Histological Laboratory) and the Hanbury Room, and the vacation of the erstwhile Secretary's office—"the octagon room"—enabled the Editor and Sub-Editor of the Journal to enjoy greater breathing space than had been their lot during some twenty years' occupancy of the small second floor room that had been originally the first Secretary's sitting-room and office. This now became the laboratory store and balance room, adjoining Professor Attfield's private room, formerly Bentley's private room, and prior to that George Walter Smith's bedroom.

COUNCIL CHAMBER, WITH PRESIDENT'S CHAIR IN FOREGROUND.

The rebuilding of Nos. 15 and 16 gave the Society more space than was required for its numerous departments, and No. 15 was therefore let, but it is doubtful whether that house will not be required before many years have elapsed, to allow of further extension. The Secretary's offices occupy the ground floor of No. 16, and the fine Council Chamber and numerous committee rooms are on the three floors above. In the rear is the block of buildings used for examination and research work. On the ground floor is the large examination hall, flanked by two dispensaries. One of these was originally intended as the examination laboratory but, proving much too small for the purpose, now forms a serviceable addition to the examination dispensary. The old examination

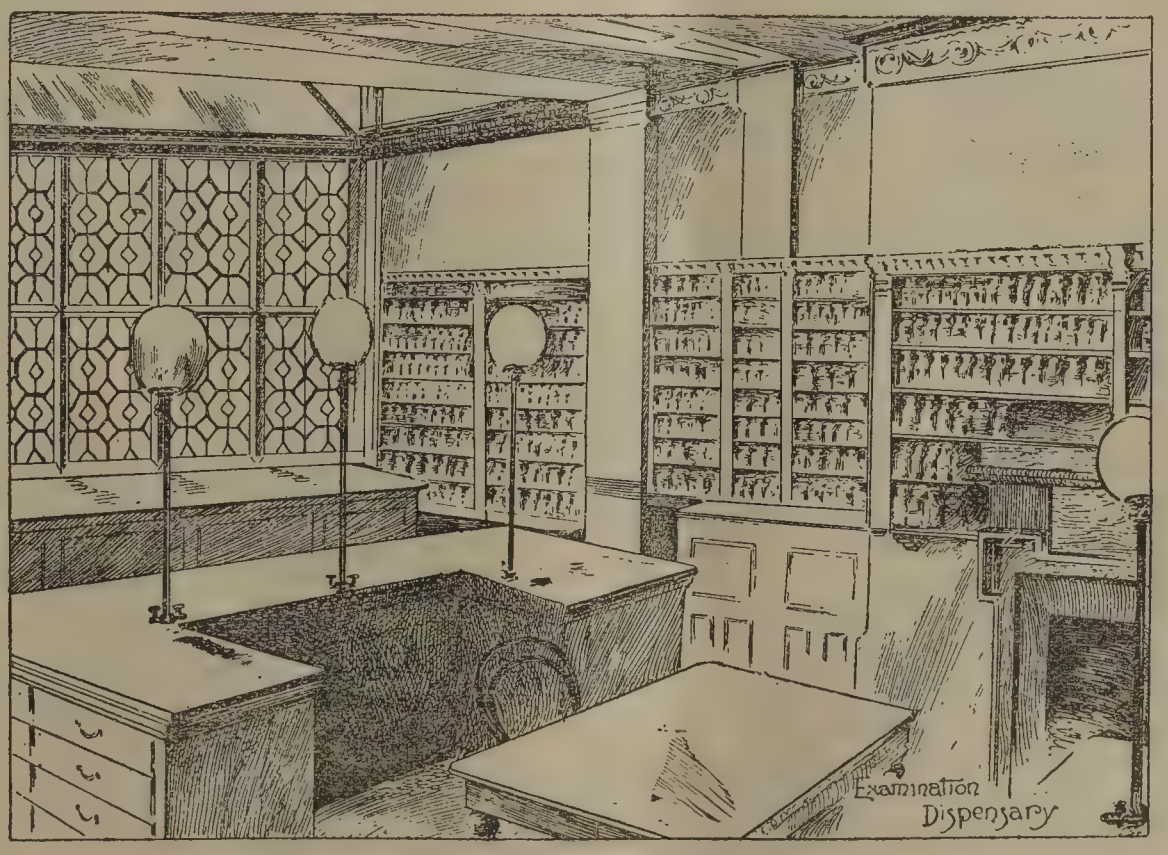
laboratory, formerly Redwood's private room, is now the pharmacy laboratory, and the practical chemistry examinations have been conducted for many years past in the School laboratory, causing much inconvenience, which will doubtless be obviated before long. The basement of the "White House," as it is familiarly termed, serves as a Journal store and lecture preparation room. Upstairs are private rooms for two of the professors, and on the top floor are the two rooms that have been used as a Research Laboratory, with apparatus rooms adjoining.



EXAMINATION HALL.—VIEW OF CHAIRMAN'S DESK.

THE SOCIETY'S ADMINISTRATIVE WORK.

An historico-biographical record of the Society's work and development would scarcely be complete without some reference to the growth of the Society's clerical staff. It may be claimed with some show of reason that the expansion of what may be termed the "Secretariat" exhibits more than anything else the measure of the continuous increase of the Society's operations. The office, in fact, being the executive centre of the body politic, grows in direct ratio thereto. Few persons to whom the present handsome suite of offices on the ground floor of No. 16, Bloomsbury Square is familiar, will possess the necessary imagination to form an accurate idea of the primitive office arrangements of half a century ago. In those early days the official staff began and ended with the Secretary, who performed all the clerical duties of the newly-constituted Society, and conducted his secretarial interviews in a small room high up in "No. 17," and somewhat in close proximity to the secretarial bedroom. Naturally, the Act of 1852 brought with it considerable additional work, and it was about this time the office staff came into existence by the appointment of a hybrid official, whose duties were apparently divided between looking after the embryo library and assisting the Secretary in nursing the infant Society. This official was somewhat grandiloquently styled "Librarian and Assistant Secretary," and in 1857 the then holder of the office was rewarded with a stipend of £75 per annum. It is interesting to note that there is yet among the officers of the Society one who commenced his official career as Librarian-Clerk—Mr. J. W. Knapman, the pre sent Librarian, who was appointed in 1866, and it is, perhaps, not inappropriate to add that some clerical remanets of the dual duties are still performed by that gentleman.

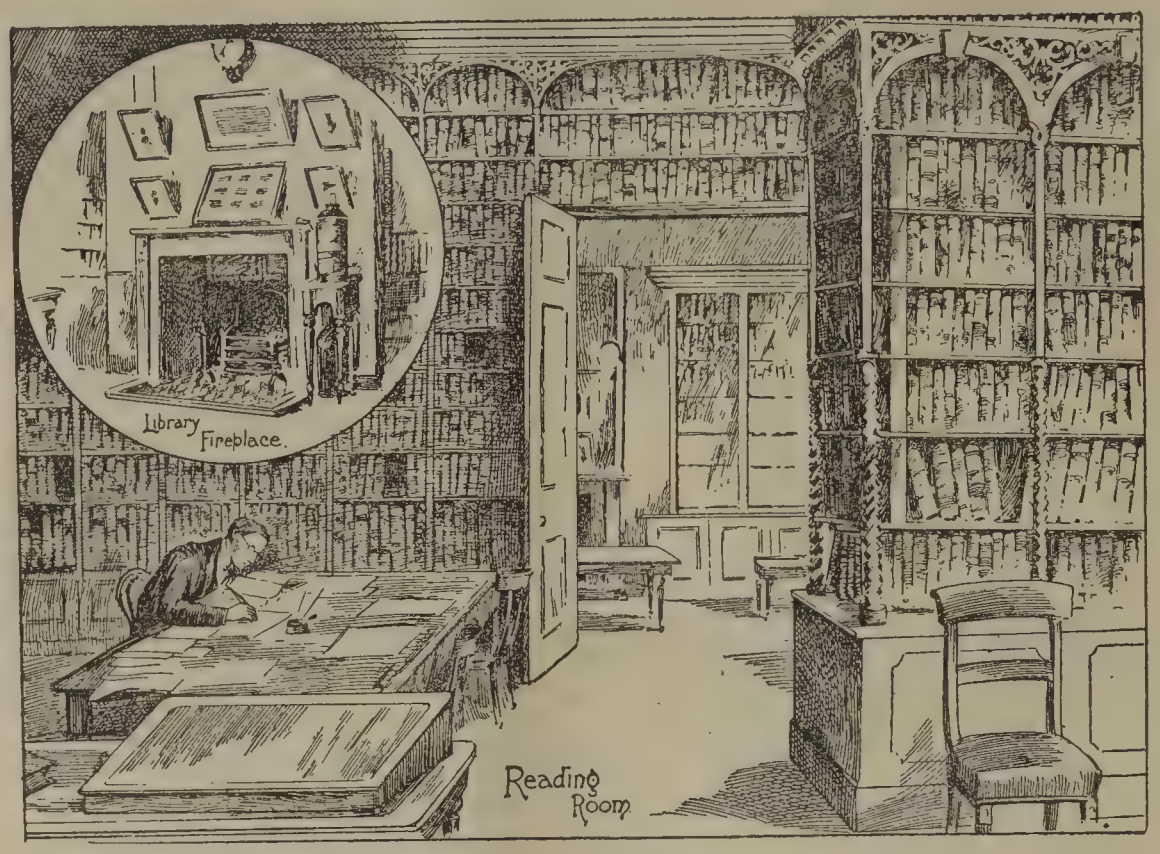


EXAMINATION DISPENSARY.

In March, 1857, Geo. Walter Smith, the first Registrar and Secretary, whose health had broken down, was succeeded by Elias Bremridge. The former had much to do with the early progress of the Society, and it is pleasing to recall the loyalty and energy which elicited from the Council of 1857, a grateful tribute to "a faithful, zealous, and efficient officer." The same words may be aptly employed to describe his illustrous successor, who, happily, is still able to take a keen interest in the Society's transactions. The Society must certainly

be congratulated upon that fortuitous combination of judgment and good luck which enabled its Council in days gone by to select such able officers as Geo. W. Smith and Elias Bremridge.

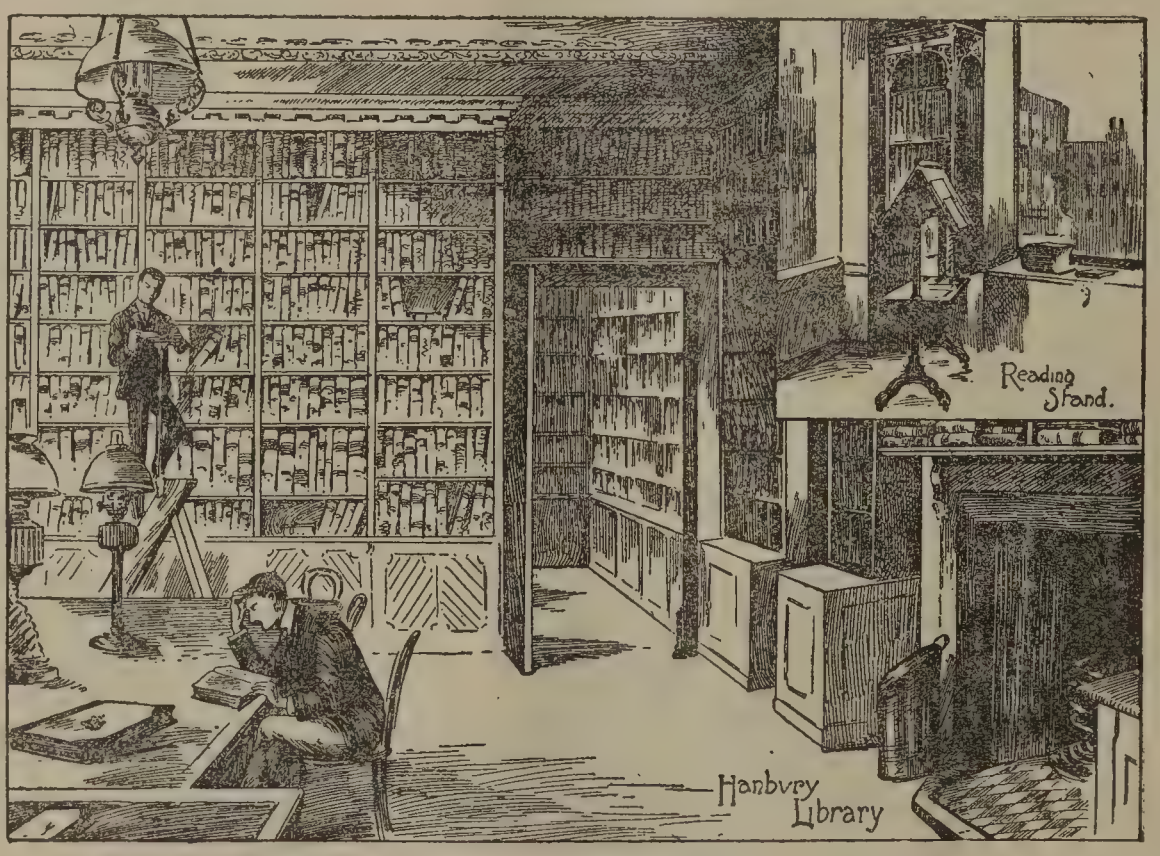
The Pharmacy Act of 1868 created a new order of things, and the duty of making and maintaining a Register of all those entitled to practise pharmacy in Great Britain made a heavy addition to the growing burden of office work. A permanent increase in the staff was imperative, and the number rose to three at a bound—a bookkeeper and two general clerks. That book-keeper was Mr. Gilbert Jones, who is now one of the most valued servants of the Society, and perhaps the best known member of the permanent staff, for he has been intimately associated with the recreations of generations of "Square" students for many years past.



READING ROOM IN LIBRARY.

At this time, too, the office itself became more permanently fixed, being removed from among the private apartments and rudimentary laboratories on the second floor, that neighbourhood of continual change, and located on the more dignified level of the floor below. Those who know the present editorial sanctum will easily see that it made an admirable office for a small staff. In later years when the laboratories at the top of the house were filled with enthusiastic, if inexperienced, students, it was chiefly remarkable for the variety and pungency of the smells which collected in a small passage way between the office and the Council Chamber (now the Hanbury Library), and acted upon the unwary with great effect. Then there was the unequal distribution of artificial temperature, which elicited many bitter complaints. The room is octagonal in shape, and the clerks' portion had a large window at one end and a huge fireplace at the other. Hence in winter the desk at the window would be a veritable Siberia of frozen ink and glacial paper, whilst the desks near the fireplace would be torrid and unbearable.

Still, it was an admirable office for three or four; but when in the early "eighties" it became necessary to have more assistance, it was frequently a matter of difficulty to accommodate the extra men. As late as 1890, when there were six clerks, the unfortunate No. 6 had to be content with a dismal corner by the swing door, where he could have done very little work, for the door was continually yielding to the vigorous push of officials, and the poor fellow must have lived in ever-present dread of a violent death.



HANBURY LIBRARY, FORMERLY COUNCIL CHAMBER.

In July, 1884, Mr. Richard Bremridge, the present Secretary and Registrar, was appointed, having for many years previously acted as assistant to his father, and from that date the record of official work has been one of continual advance. There are now seven clerks, and the change effected in 1890 from the old eight sided room in No. 17 to the commodious ground floor of the new building, No. 16, was in every way an improvement.

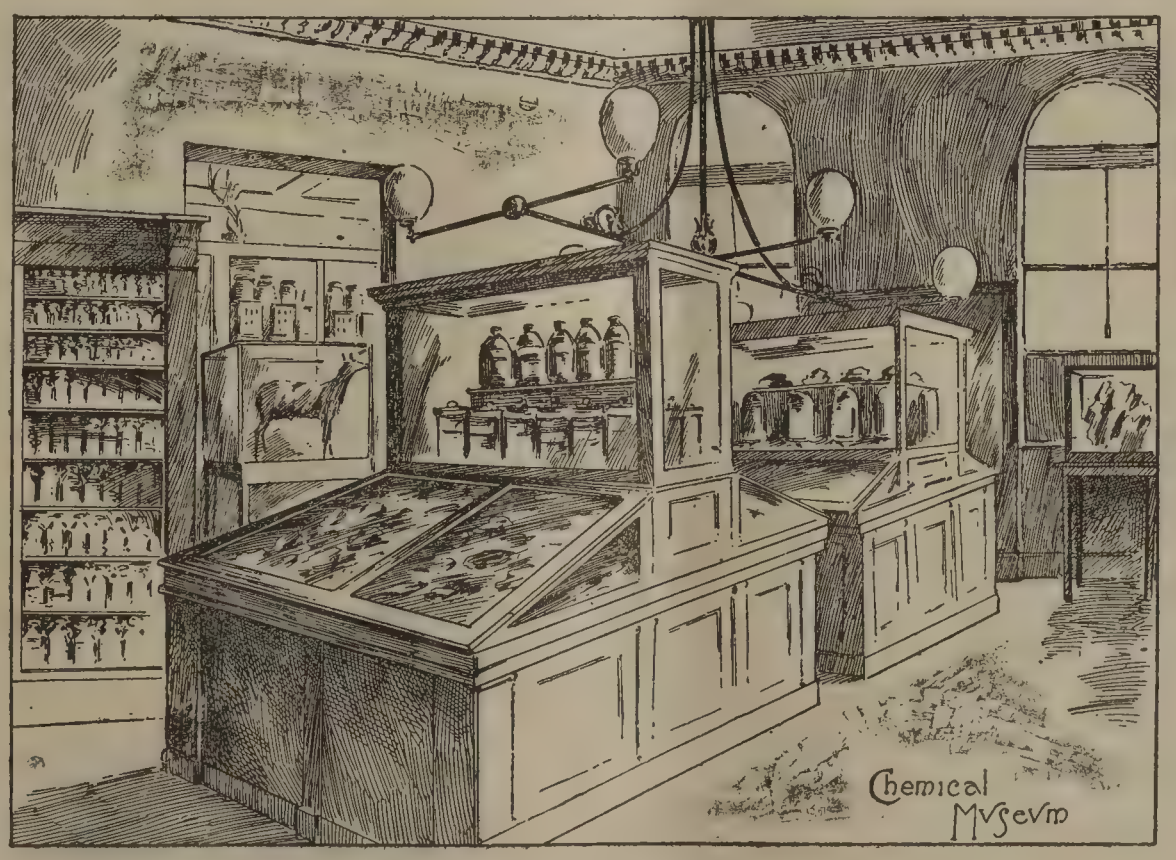
It would be wearisome as well as foreign to the purpose of this sketch to detail the various changes in the office staff or to

refer particularly to the present members thereof. It will be sufficient to say that the Secretary has a good reliable army of helpers, which, like its chief, is animated with a spirit of loyalty to the Society and to those who direct its destinies. The reason is not far to seek. Mr. Bremridge possesses the faculty, none too common in men of his position, of securing the respect, and even personal regard, of each of his subordinates, and in such circumstances it is not strange that the administrative work of the Society should be so smoothly and efficiently done. It should not be imagined that there is little to do in the office with many to do it. That is a common fallacy with those who crave for a reputation for wit or cynicism. The increase in the number of candidates for examination, and the evolution of a complex system of examination, the greater number of prosecutions, the increase in the Register—all these things tend to keep the office full. If any one doubts it, let him make a comparison between the Registrar's report issued in February, 1895, and that issued twenty years previously.

EDITOR'S ROOM, FORMERLY SECRETARY'S OFFICE.

THE SOCIETY'S LIBRARY.

In the eighth number of the Pharmaceutical Journal (Feb., 1842) was published an article on the Library and Museum, from which is gathered the fact that such institutions existed only in name, the room devoted to library purposes being indeed furnished with drugget, table and chairs, and the table being supplied with pens, ink, and paper, but there was "not so much as a pharmacopœia, or a manual of chemistry to amuse or instruct the members or associates" who might chance to call. At the annual meeting in the following May, the Council reported the erection of two book-cases, the purchase of the principal medical periodicals, and the receipt of many donations. It was further announced that Mr. Redwood had been appointed Librarian and Curator of the Museum. The annual report of 1843 showed that the number of books had increased to 746 of which 570 had been presented. The additions during the succeeding year numbered 500 volumes, and the Council reported a gradual increase in the number of visitors.



CHEMICAL MUSEUM

The question of the circulation of books from the Library having, been considered, it was resolved in January, 1852, that a commencement be made, and a set of Library rules was formulated. A catalogue was also prepared, and was published in 1853. This was an octavo pamphlet of seventy-two pages, and the edition consisted of 1000 copies. The entries were by author and subject, arranged alphabetically.

In November, 1854, the condition of the Library was the subject of an editorial, which contained an amusing account of the zeal manifested by would-be readers as to the regulations, hours of attendance, etc., and of the fears which arose as to the capability of the space occupied by the Library to

accommodate all the candidates for its advantages. But it was a case of great cry and little wool, for although the Council made the necessary preparations for the influx of visitors not only during the day but also in the evening, causing fire and gas to be lighted for their benefit, there was very little demand made upon the resources of the Library, or on the services of the Librarian, who was pictured as sitting alone in his glory waiting for somebody to turn up. The efforts of the Council being unsuccessful, the gas was turned off and the fire discontinued, to be relighted, however, at a future date.

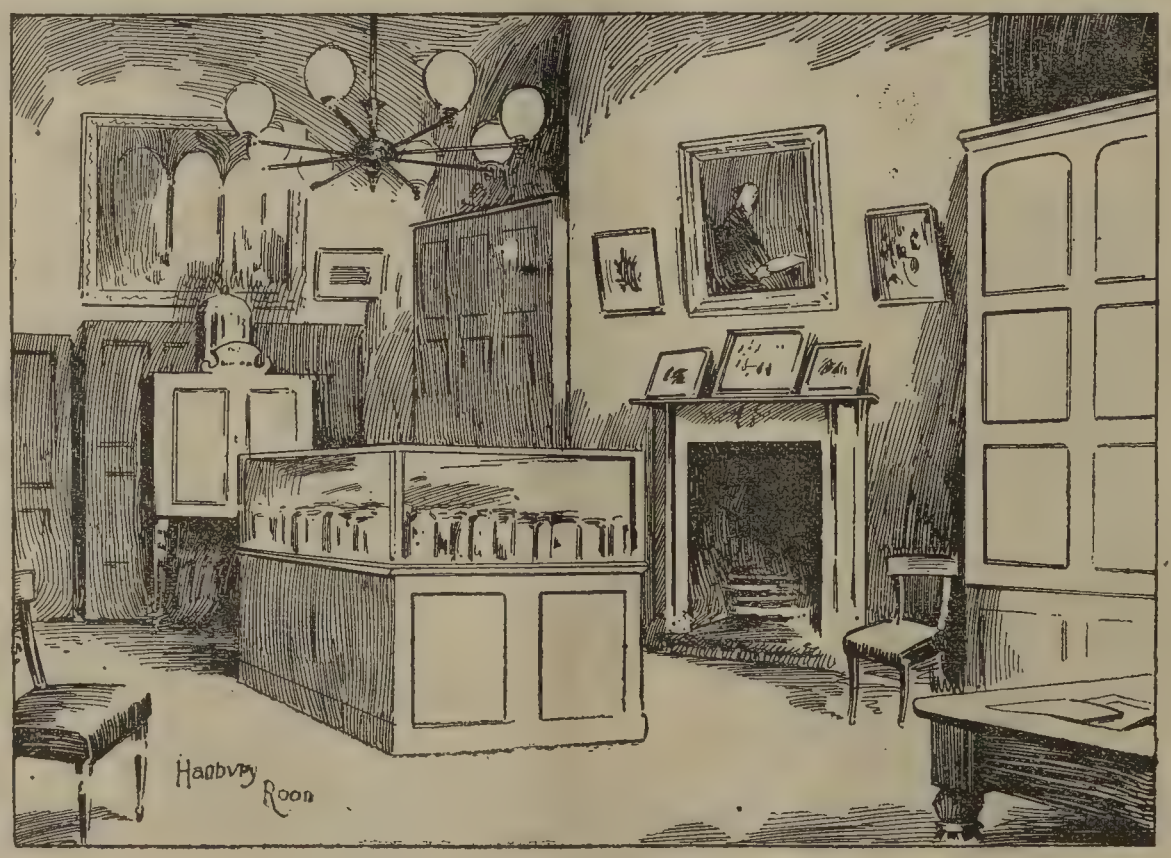
HANBURY ROOM, FORMERLY COUNCIL CHAMBER AND LIBRARY.

By this time the Library had increased to nearly 2000 volumes, and continued to grow larger year by year, the principal works and periodicals on chemistry, botany, materia medica, and pharmacy, including pharmacopœias, being received as donations or purchased. It does not seem quite clear as to what date Professor Redwood ceased to act as Librarian, but in 1858, after several appointments which did not last for any lengthened periods, Mr. Charles Sharp was elected to the office. At the end of 1863, the number of volumes had increased to 3000, and an appendix to the catalogue was prepared and printed.

The circulation of books had been hitherto but small, apparently not exceeding 500 in a year. The attendance in the Library was reported as 3294 during the year.

The claims of the Library were advocated in the columns of this Journal on several occasions by the Editor, and also by Mr. Joseph Ince. In 1860, the late Daniel Hanbury wrote a letter to the then President, Thomas Morson, urging the necessity of securing the principal foreign pharmaceutical journals, and indicating those which in his judgment ought to have a place in the Library. Some years afterwards Mr. Hanbury accepted the position of official visitor to the Library, and continued to hold it until his lamented death.

The room in which the Library was originally located was that now occupied by the Hanbury collection, and in which the Curator of the Museum ordinarily works; its dimensions are 25 feet by 16 In 1863, the Library was transferred to the large square room, 26 by 26, on the first floor, at the corner of Bloomsbury Square and Great Russell Street. Two adjoining rooms on the Russell Street side have since been successively added as further accommodation became necessary.



[HANBURY ROOM.—VIEW FROM DOOR.

Upon the resignation of Mr. Sharp, early in 1866, the present excellent Librarian, Mr. J. W. Knapman, succeeded to the position.

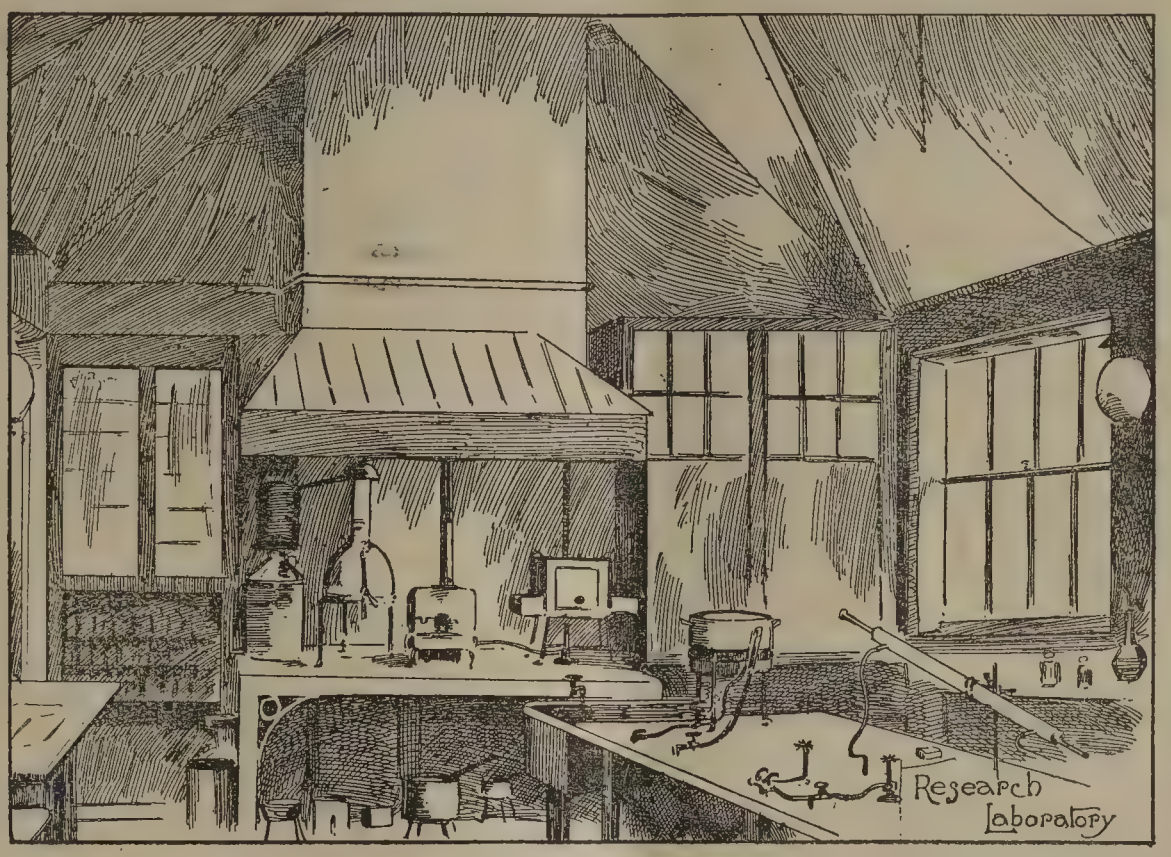
A new list of additions from 1864 to 1867 was published in 1868, and thenceforward an annual list was printed and issued with the Journal until the end of 1878; also in 1882, 1883, and 1884. Meanwhile, in 1873, a new edition of the catalogue was prepared, and 1500 copies were printed, whilst further editions, greatly enlarged, were published in 1880, 1885, 1888, 1889, and 1894.

The continued growth of the Library may be indicated in decades: in 1871 there were 3687 volumes and pamphlets: in 1881, 8096; in 1891, 10,962; at the present time the number is 12,268.

Among the many valuable donations to the Library since its commencement may be specially mentioned a large selection from the valuable collection gathered by the late Daniel Hanbury, which was presented by his brother, Mr. Thomas Hanbury, F.L.S., of La Mortola, in November, 1892. The Library had been previously benefited by a legacy of £100, left by Daniel Hanbury for its improvement.

During the last twenty years the total of daily attendances during a year has ranged between 3037, the lowest, in 1880, and 6718, the highest, in 1876. In the evenings, the yearly totals have been between 1429, in 1881, and 2264, in 1897. Last year's numbers were — day, 4148; evening, 1465.

The circulation of books has varied in like manner, the lowest being 2014, in 1877; and the highest 3506, in 1888; last year's numbers being 2176.

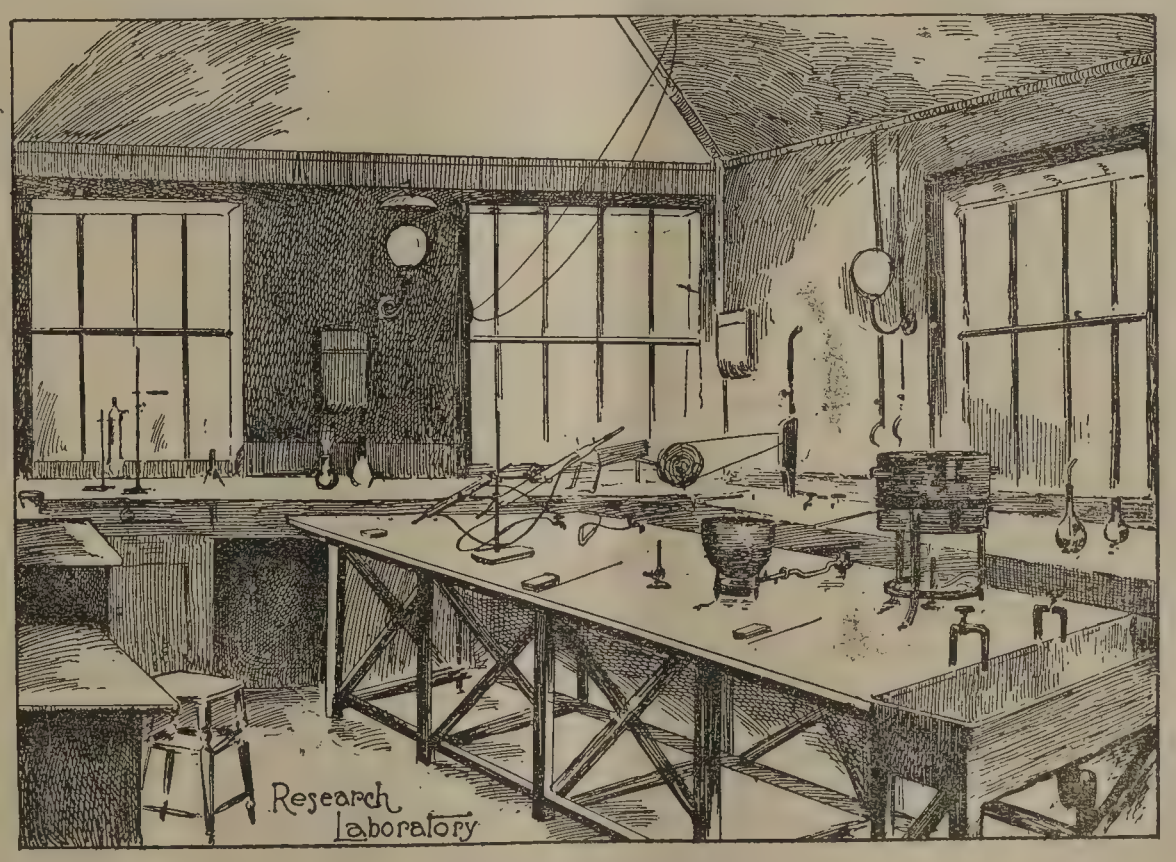


RESEARCH LABORATORY.

THE MUSEUM OF THE SOCIETY.

The Museum in its earliest days consisted of a single room, which was thus described in the *Pharmaceutical Journal* for February, 1842, vol. i., p. 436:—

"The Museum is a front room on the ground floor, 26 feet by 20, containing not a vestige of furniture. The bare boards are well scoured, the ceiling and walls are in a perfect state of repair, but there is not even a chair or a table to invite the student to sit down and contemplate what alterations are likely to take place in the apartment within the next six months. On the floor at one corner is a small heap of brown paper parcels, containing a few donations from two or three members, and on the mantel-shelf are about a dozen glasses and bottles, in which are sundry crystals, roots, and other substances. These objects form the nucleus of the Museum of Materia Medica of the Pharmaceutical Society of Great Britain."



RESEARCH LABORATORY.

The ideas then prevalent concerning the character and scope of the Museum were expressed as follows (*l.c.*, pp. 437-8):—

"The Museum ought to contain a specimen of every substance comprised in the materia medica which is capable of preservation, in the highest perfection, and in a state of the greatest purity. In juxta-position with each good specimen, one of inferior quality should be placed, in order that the student may learn to exercise his judgment in the choice of drugs. In some cases five or six samples of the same drug in different degrees of purity might be advantageously displayed.

"It is desirable also to exhibit preserved plants in the different stages of their growth; and those manufactured drugs which undergo several processes in their progress from the raw state into the condition in which they are used, should be arranged in a connected series, in order to familiarise the student with every aspect in which they exist. Our Museum, unlike an ordinary exhibition of natural and artificial curiosities, may probably contain but little to attract the notice or gratify the curiosity of the thoughtless and casual observer; but those who are interested in the

study of the natural sciences connected with our profession, will be able to appreciate the advantage of bringing together into one public magazine, a complete and classified collection of all the substances with which we desire to be acquainted."

At the first annual meeting of the Society, in May of the same year, it was stated that "two cases for the Museum were in progress," and "the Council earnestly hope that in due time, by the zeal and liberality of their friends, the Society will possess a Museum of Materia Medica which shall do credit to, the Society and honour to the nation." Mr. Redwood was appointed Curator of the Museum (as well as Librarian). In July, 1843, the glass cases and jars were ready for the reception of specimens, and in August the list of donations to the Museum was too long to publish that month, and had to be deferred to the September number, in which it occupied two pages, the following well-known firms being amongst the principal donors:—(chemicals), Messrs. Davy, Macmurdo, and Co., Howard, and Morson; (scale preparations) Mr. John Savory; (materia medica), Messrs. Herring Bros., Horner Hudson, Ince, Pigeon and Son, and Squire. It is interesting to note amongst the chemicals presented by Mr. Morson, "aconitia, crystallised," and a few relics of ancient pharmacy amongst those presented by Mr. Ince, viz., opopanax, tacamahaca, terra lemnia, Goa-stone, oriental benzoar, and Venice treacle. The list of donations of the wholesale firms is instructive as forming a record of the drugs then in use, some of which, *e.g.*, sagapenum, *Pyrola umbellata*, *Daucus carota*, and angelica have now disappeared from general use in this country.

The herbarium may be said to have been started in October, 1842, when the President, Mr. Payne, presented a collection consisting of 213 specimens of British plants, and of all the indigenous official plants of the London Pharmacopœia (A.D. 1837). Hitherto only fine specimens of drugs had been presented, for the Editor of the Journal remarks (p. 342) that "the most acceptable donations to the Museum would now be specimens of drugs of inferior quality to contrast with the fine specimens already received." A few of the donors seem to have overlooked or misunderstood the scope of the Museum, for amongst the donations may be noticed "Five jars containing snakes," which, it is needless to say, did not find a permanent home here. In May, 1843, there were already "850 specimens of materia medica and its preparations" (510 of which were donations to the Society), comprising altogether a complete series of the materia medica of the London Pharmacopœia, and many very curious and rare specimens, both of home and foreign production and preparation." Amongst these may be noticed aloes wood, Woorali poison (not then employed in medicine), the carob fruit, and a piece of peat from St. Paul's Churchyard (from Mr. Keating). The Museum seems at this time to have attracted the notice of outsiders, since we find that a large number of donations were presented by the Horticultural Society, through Dr. Lindley.* In 1844 the Council reported that the Museum was "in a very forward state," and "it is admitted will bear comparison with any museum of the kind in Europe." This is a questionable statement if such collections as those of Guibourt were taken into account. The statement however is modified by the comment, "It is more remarkable for the quality than for the extent of the collection." During 1845 1846, the laboratory seems to have absorbed the attention of the Curator and Librarian, Mr. T. Redwood, since few donations were reported, whilst it is stated that "the chemical products resulting from the labours of our own pupils will be viewed with great satisfaction."

In 1850, an "arrangement" was in progress for adding to the Museum a portion of the collection of Dr. Pereira, consisting of 640 specimens, and comprising many curious and unique specimens. In 1851, a large number of specimens were added to the Museum from the International Exhibition, probably through the influence of Mr. Daniel Hanbury, who already displayed great interest in materia medica, and who had commenced contributing to the Museum the previous year. In consequence of these extensive additions, two large cases were added to those already existing in the Museum. One of the donations from the Exhibition consisted of a handsome show-case, presented by Messrs. Howards and Sons, containing forty different varieties of cinchona barks and a series of large specimens of the cinchona alkaloids in glass vessels, which at that date must have been of considerable value. In 1854 there was but little vacant space for additional cases, whilst three cases of specimens from the Pereira collection had still to be incorporated.*

In 1855 the necessity for a catalogue for reference was pointed out, but no steps appear to have been taken by the Curator to prepare one. In this year also the Professor of Materia Medica was appointed Curator of the collections of organic materia medica, so that the Museum was then under the joint curatorship of Professors Redwood and Bentley.

In 1859 about three hundred specimens belonging to the late Dr. R. Brown were presented to the Society by Mr. J. J. Bennett, the Keeper of the Botanical Department at the British Museum. No trace of these specimens can be now found in the museum, with the exception of a section of the trunk of the Winter's bark tree. In 1861 a valuable donation in the form of a musk deer was presented by Messrs. Peake, Allen and Co., and it still forms a prominent object in the collection of animal materia medica. In 1863 three more rooms on the right-hand side of the entrance door, and partly facing Great Russell Street, were added to the Museum, under the farthest of which a workroom for the Curator was reserved, approached by a staircase.

In 1863 further collections of drugs from the International Exhibition of 1862 were added to the Museum, representing chiefly the drugs of India, Turkey, the Cape of Good Hope, and Manila followed in 1864 by a collection of the alkaloids and acids of opium from Messrs. T. and H. Smith and Co. These last do not appear to have been kept as a distinct collection. In 1868 the Council considered it expedient to appoint a curator to be "in constant attendance in the Museum in the exercise of his duties." There does not seem to be any record of the experiments that were made in this direction. Apparently, two or three gentlemen temporarily occupied the position before Mr. James Collins, who is said to have been recommended by Mr. D. Hanbury, was elected. This appointment appears not to have given so much satisfaction as was expected, and in 1872 the engagement was terminated. It should be stated, however, in justice to the Curator, that he had not at any time the proper control of the Museum, which seems to have been regarded rather as a collection for the Professors' use than as a separate institution for the use of students and visitors.

Mr. E. M. Holmes, the present Curator, was appointed in 1872, and under his fostering care the Museum has increased by leaps and bounds, both in bulk and in reputation. At the present time it is undoubtedly the best of its kind in existence, and by the friendly aid of the now numerous corresponding members of the Society it appears likely to maintain that reputation in the future. Large numbers of specimens are continually being sent out from the Museum, but still greater numbers continue to pour in and tax the ingenuity of the Curator to classify them and exhibit them to advantage. However, this is another story.

* One of these was quillaia bark from Rio Janeiro, a drug apparently little known at that time.

* Dr. Pereira had recently removed these from the London Hospital, where he also lectured, and where a part of the collection formed by him still remains.

PHARMACEUTICAL JOURNAL.

A Weekly Record of Pharmacy and Allied Sciences.

ESTABLISHED 1841.

Circulating in the United Kingdom, France, Germany, Austria, Italy, Russia, Switzerland, Canada, the United States, South America, India, Australasia, South Africa, etc.

Editorial Office: 17, BLOOMSBURY SQUARE, W.C.
Publishing and Advertising Office: 5, SERLE STREET, W.C.

LONDON: SATURDAY, OCTOBER 10, 1896.

THE COUNCIL MEETING.

At the resumption of business for the current session last Wednesday there was an almost full attendance of members of Council. After the minutes of the August meeting had been confirmed, the President read letters he had received from Mr. Joseph Ince—acknowledging the vote of an annuity on his retirement from the educational staff—and from Professor Greenish, thanking the Council for his appointment as Professor of Materia Medica and Pharmacy.

The death of Mr. Betty—a former member of the Council—was referred to by the President, with a suggestion that he should be authorised to write to Mrs. Betty a letter of sympathy with her and her sons on the loss they have sustained. This was unanimously agreed to, Mr. Hampson and Mr. Atkins adding some appreciative remarks in reference to their former colleague. Mr. Carteighe also mentioned some very interesting circumstances, illustrating Mr. Betty's relations to the Society at different times, which serve, as he said, to show how disregard of comparatively trifling matters may be productive of important consequences. Though Mr. Betty, under the influence of a mistaken idea, was at one time one of the strongest opponents of the Society, he afterwards became a most loyal friend, and took particular interest in the Society's educational work. In bringing about that change, Mr. Carteighe was largely instrumental, and considering the personal influence exercised by Mr. Betty among the opponents of the Society, the result obtained was most advantageous.

The additions to the Society comprised six members, thirty-two associates, and thirty-three students.

The report of the Finance Committee was adopted without discussion, having reference only to the usual details of receipts and expenditure. Attention was called by the President to a letter from Mr. John Bain—the Treasurer of the Liverpool local committee in connection with the British Pharmaceutical Conference—forwarding a cheque for ten guineas as a donation to the Benevolent Fund out of the balance remaining from the entertainment fund. In recognition of the services rendered by Mr. T. H. Wardleworth as Local Secretary of the Conference, the Committee desired that the votes in respect of this donation should be placed in his name. Mr. Martindale having been unable to attend at the last Council meeting, expressed his satisfaction that the Council had on that occasion suitably recognised the activity, courtesy, and kindness shown to the Conference at Liverpool.

The report of the Benevolent Fund Committee recommended the payment of seven grants, amounting in all to seventy-eight pounds—that three additional annuitants should be elected next December, and that besides the two candidates unsuccessful at the last election the names of two other candidates should be added to the approved list. In moving the adoption of the report, Mr. Bottle referred in sympathetic terms to one of the cases that had been before the Committee—an application from the widow of an old member of the Society, who was formerly for many years on the Board of Examiners—though he could not trust himself to say more than to point to the recommendation of a grant which he should be pleased to see take a larger and permanent form. Mr. Atkins also expressed a hope that the assistance rendered in this case would be of a more permanent character. In regard to the general work of the Committee, he anticipated that the difficulty of dealing with cases would increase in consequence of the pressure to which all branches of trade are now subjected. In many instances he believed that the cases coming before the Committee were largely attributable to the inexorable influences now tending to favour the survival of the strongest rather than the fittest, and that the consequent demands upon the Benevolent Fund would increase. On the subject of the proposed election of only three new annuitants, although four have died recently, Mr. Atkins expressed his opinion that the Benevolent Fund is not keeping pace with the increasing demands upon it. He fully expected that more money would have to be raised next year, but that necessity could be dealt with when it arose in the future.

Mr. Hampson expressed disappointment that the Committee had not reported upon the subject it was instructed to consider last August, viz., the mode of election of annuitants, and on this subject a discussion followed, in which Mr. Atkins explained that after considering the question of the mode of election the Committee came to the conclusion that the Fund would suffer if Mr. Hampson's proposal were adopted. The Vice-President strongly deprecated any step that would take the election of annuitants out of the hands of subscribers. Mr. Carteighe, while admitting that Mr. Hampson's views would commend themselves to all right-minded people, could not overlook the fact that in some respects benevolence is a business: subscribers would object to being deprived of the power of influencing elections and exercising patronage, and in the present instance some might think the Council had stolen a march upon them if the whole of the four approved candidates were to be elected.

This was another point upon which Mr. Hampson expressed disappointment. He had hoped that the present condition of the Fund would have encouraged the Committee to recommend the election of four annuitants. Mr. Storrar also expressed regret that a larger number of annuitants had not been approved for election, as he came to the conclusion that the financial position was better than it was last year. On this point Mr. Bottle expressed dissent, and he was supported by Mr. Atkins and the Vice-President, who insisted on the importance of the casual grants, as being of such a nature that a considerable sum must be retained for that purpose, and the Committee would not be justified in expending the whole Fund as annuities. Mr. Symes pointed out that the reduction in the number of approved candidates increased the chance of their election, and really

tended in the direction desired by Mr. Hampson. In view of the prospect that demands on the Fund would increase, Mr. Symes feared that the amount of the annuities might have to be re-considered. On this point, however, the majority of the Council seemed to share the view put forward by Mr. Carteighe, that if an annuity be given at all, it should be enough for a man to live upon. He thought it ridiculous to expect that a man who had been a chemist and druggist could live upon thirty pounds a year, especially if he were in ill-health. In his opinion the best policy for the Fund is to be generous, to spend all the whole year's income in annuities and grants, without attempting to save money, and if the funds got low, special efforts would have to be made to raise them. This discussion occupied a considerable portion of the meeting, and it was a useful opportunity of stating the different views held on the points referred to. Eventually Mr. Hampson explained that his desire was to effect saving of expense and trouble for candidates, a position that was fully appreciated by the rest of the Council, and in closing the discussion the President said that the matter must be regarded both from the politic and financial aspects, and while he agreed that the whole available income of the Fund should be expended, he believed that it was necessary to allow subscribers to exercise an influence in the election of annuitants. The report and recommendations were then adopted unanimously.

A report was presented on the examinations held during the present month in England and Wales, showing that out of 164 candidates for the Minor qualification only 50 passed, and out of 20 candidates for the Major 9 passed.

In referring to the circular sent out in connection with the nomination of local secretaries throughout the kingdom, the President spoke of the importance attached by the Council to these appointments as a connecting link between members of the Society and the Council. Local secretaries are capable of exercising considerable influence, and consequently the appointment of the best man in every town and district is highly desirable in the general interest; to arrive at that result local members are asked to express their views through the medium of the nomination cards sent out for the purpose. As an ideal method of nomination the President suggested that this work should be carried out by local meetings of members to assist the Council in appointing suitable persons for the office. He desired to thank all Local Secretaries for their services during the past year, and to point out that much good work is done by those who devote time and thought to the interests of the general body.

Letters have been received from Mr. Carles, Consul for the Corea, and from M. Herrera, of Mexico, expressing their intention to do what they can for the Society in their capacity of corresponding members.

On the recommendation of the General Purposes Committee a resolution was passed that the Bell Scholars be permitted to apply for free admission to the advanced course of study in the Session following that in which they attended the elementary course, also that the holder of the Manchester Scholarship, Mr. Barlow, be allowed to pursue his studies at Owens College.

After considering the legal portion of the report, the Council resolved that the Registrar be authorised to take proceedings against various persons for infringements of the Pharmacy Act.

The Council meeting in January will be held on the second Wednesday of that month.

PHARMACEUTICAL SOCIETY.

EXAMINATIONS IN LONDON.

October, 1896.

MAJOR EXAMINATION RESULTS.

Candidates examined 20
" failed 11
" passed 9

Cherry, Frederick.
Daniels, Herbert Joseph.
Dewhirst, John Arthur.
Dixon, Rowland.
Johnson, John Richard.
Macintosh, Robert.
Sargeant, Fredk. Pilkington
Scurlock, David.
Ware, Alan Henry.

MINOR EXAMINATION RESULTS.

Candidates examined 164
" failed 114
" passed 50

Alford, Edward.
Barnett, Henry.
Bell, Arthur Henry.
Bennett, William.
Cooper, Walter.
Davies, David Arthur.
Davies, William Henry.
Day, Arthur.
Dennis, James Edward.
Drust, John Hubert.
Duck, Frederick Edwin.
Eaton, Tom Wilcox.
Edwards, George Nelson.
Fordham, Sidney Herbert.
Fothergill, James.
Fowler, Robert Hugh.
Herbert, Alfred Walter.
Hollow, Daniel.
Hopkins, John Sidney.
Johnson, William Danily.
Jones, David Alban.
Lumley, Harold.
Mandelson, Samuel Cohen.
Morris, Harry Barker.
Newton, Francis Herbert.
North, Llewellyn.
Osborne, Ernest.
Palk, William Harold.
Pratt, Charles Percy.
Price, Arthur Stainton.
Rambaut, John Ackland.
Robinson, John Lawrence.
Saunders, John Frank.
Sexton, William Frederick.
Shirtliff, William Edward Daniel.
Smith, Charles Clegg.
Smith, Frank.
Spear, Frederick Augustus.
Spencer, William Frederic.
Thomas, William Henry.
Thompson, Edward.
Tweedy, Sidney Chas. Günther.
Walker, Alfred.
Wallis, James Samuel.
Walton, Thomas Robert.
Wells, John James.
White, David.
Williams, Richard John.
Wilson, Harold Oates.
Woodhouse, George Ernest

MODIFIED EXAMINATION RESULT.

Candidate examined and passed 1
Lynn, Robert George, London.

FIRST EXAMINATION.

Certificates by approved examining bodies were received from the undermentioned in lieu of the Society's examination :—

Aldrich, Colin Frederick, Stowmarket.
Bailey, George W., Spalding.
Bell, William Austin, Bridgnorth.
Bennion, Richard, Creswell.
Bills, Albert James, West Bromwich.
Bradley, Alfred, Newark.
Brown, Robert C., Leeds.
Cook, Thomas, Lincoln.
Cox, Walter, Broseley.
Evans, David, Brecon.
Franklin, Arthur C., Stamford Hill.
Garside, George, Southport.
Harman, Harry, Great Marlow.
Jones, E. Charles Little, Cardigan.
Morris, G., Winchmore Hill.
Morris, Harold, Brecon.
Neale, John, Southwark.
Owen, Alfred, Ledbury.
Peake, Walter Henry, Twickenham.
Peck, John Wicliffe, Clapham.
Poad, John Edward, Looe.
Rhodes, Arthur, Shipley.
Rodhouse, Lewis, Leicester.
Saunders, John, West Worthing.
Scholefield, William E., Luton.
Stearn, Leonard, Brixton.
Stearn, Sydney, Brixton.
Stevenson, Arthur L., Todmorden.
Tebbutt, Thomas P., New Brighton
Walker, Frederick G. C., Kendal.

ANNOTATIONS.

The Society's Early History.—In preparing the article on the School of Pharmacy that appeared in these pages a month ago (page 221 *et seq.*), it was found to be somewhat difficult to deal with the school premises as distinct from the rest of the Society's House, and after careful consideration it was decided to cut the Gordian knot by publishing a supplementary descriptive article on the subject This has resolved itself into an historico-biographical account of the beginning and early progress of the Pharmaceutical Society, but time has been all too brief to allow of more than a scanty general survey of the wide extent of ground thus opened up. The sketch is believed, however, to be thoroughly accurate, and is accordingly commended to those readers of the Journal—a large number, doubtless—who are interested in the past of the great organisation which they help to support. It is interesting to note that the date of the formation of the Society, as quoted in the Calendar of the Pharmaceutical Society ever since that publication first appeared, proves to be incorrect. The meeting held at the "Crown and Anchor Tavern" on February 15, 1841, had no reference whatever to the formation of such an association, but dealt solely with a recently drafted Bill to amend the laws relating to the medical profession. The Committee then appointed, however, to watch and oppose the progress of the Bill ultimately became the first Council of the Pharmaceutical Society. The actual formation of the Society took place at the "Crown and Anchor" on April 15, 1841, as explained on page 315.

The School of Pharmacy is open once more, what may be termed the third chapter in its history having been fairly commenced. The beginning has been good in every way, and with the clear start that has been afforded the School staff by the members of the Society, as represented by the Council, we shall all hope for good results. It may be that the students of the present session are destined to leaven the whole of British pharmacy, and with such a possibility in view the results of the new experiment will be awaited with the greatest interest. A desire has been felt also, if not expressed, that in the future improvement in educational methods should be regular and continuous. The School of Pharmacy of the Pharmaceutical Society should be always in the van, progressing by almost imperceptible steps rather than by periodic revolutions, and advancing so steadily to new positions that they will be attained and firmly held before the surrender of older positions seems to have become matter for formal consideration.

Mr. Walter Hills is not only fortunate in respect of the large and enthusiastic assembly that greeted him on first taking the chair, as President, at a public meeting of the Society, but also because of the ready response of students to the increased demands made upon them under the new scheme of instruction that has been inaugurated during his term of office. It does not seem necessary to publish the number of entries at the School, but members will be glad to know that the figures are extremely satisfactory, being even higher than was anticipated.

Mr. Brudenell Carter was exceptionally fortunate, both in the matter and the manner of his address. The subject selected was an ideal one upon which to address students, and pharmaceutical students in particular, as conductors of journals devoted to pharmacy know from painful experience. More than this, however, Mr. Carter's delivery was excellent, the sentences flowing from his lips bright and sparkling, to the very great enjoyment of all who heard him. It would be difficult for a larger audience than was present to crowd into the lecture theatre, and the indications that so many gave of their interest in the affairs of the School and their loyalty to the Society are fully appreciated by the responsible authorities.

Mr. David Storrar's address to the Sheffield students was practical in the extreme. As might be expected from a "northerner," he was strong on the value of apprenticeship, and he also expressed himself in favour of local effort. But above all he urged pharmacists to take their rightful places in the world as working citizens, and not to be content to act as drones in everything not directly connected with the exercise of their craft. A useful address—healthy in tone, not too long, and comprehensible to all who are likely to read it.

The Sheffield School of Pharmacy began its twelfth year of existence on Thursday, having been regularly carried on since 1885 by the local pharmaceutical association, aided by an ever-changing staff of voluntary lecturers, for the most part individuals engaged in the practice of pharmacy. Classes at moderate fees are now conducted in botany and materia medica (lecturer, Mr. John Austen; demonstrator, Mr. E. C. Exell), and in chemistry and physics (Mr. Hy. Highfield), a laboratory being available for practical work. A striking feature of the handy little syllabus just published is the "Advice to Students," which might with advantage be copied by many other institutions. The class specially catered for in this School is that of pharmacists' pupils, and it is stated that the lecturers deem it advisable to warn intending students against attempting too much work during the early part of their course at the School, as experience teaches that those first year's students accomplish most who confine their attention to one subject, or at most to two. It is urged, also, that "the too frequent practice of joining classes when not sufficiently prepared to study with advantage the subjects there taught, is inconvenient to all concerned, and to the especial disadvantage of the students themselves." Very true and much to the point.

'Science Progress' has become a quarterly instead of a monthly publication, the October issue being the first of the new series. The price is advanced to three shillings, for which sum the *Scientific Press*, Limited, provides one hundred and twenty-four pages dealing with the latest science. The first article, in which Mr. G. J. Symons, F.R.S., deals with "Scientific Weather Forecasting," may afford a dreary sort of satisfaction to some who have had their autumn holiday spoiled by persistent rain, but the continued downfall will certainly check any tendency to study in the field the "Natural History of Igneous Rocks," as propounded by Mr. Alfred Harker, M.A. A paper on "Recent Work upon Visceral and Allied Nerves," by Dr. T. Gregor Brodie, seems distinctly appropriate to the situation, under existing meteorological conditions, and supplementary to this we have one on "The Nervous System of Cœlentera," by Professor S. J. Hickson, F.R.S. "Notes on Parasites, I.," by Mr. A. E. Shipley, M.A., "Teratology in Modern Botany," by Professor K. Goebel, and "Palæobotany and Evolution," by Mr. A. C. Seward, M.A., Examiner in Botany to the Pharmaceutical Society, are subjects more likely to afford consolation to the pharmacist smarting under the effects of Nature's unreasonableness, but indeed these papers can be freely commended for the interest they attract. A man must be truly hungry for science who desires more at once than is here supplied, and more than mean if he begrudges the nominal price charged by the publishers.

Death of Dr. Langdon Down.—With very deep regret we record the death of Dr. Langdon Down, which took place suddenly at Normansfield on Wednesday last. That feeling will be shared by many members of the Society, besides those to whom Dr. Langdon Down was personally known, another gap being thus caused in the ranks of honorary members of the Pharmaceutical Society, as well as in the chain of connecting links with the long-past early days of the School of Pharmacy. His name appears in the prize-list for 1847, as winner of the organic chemistry prize, and he was elected an honorary member of the Society in 1866, having in the interval made for himself a prominent position in the world of medicine. Dr. Langdon Down was a warm friend of the Pharmaceutical Society, and enthusiastically appreciative of the benefit he had derived from the Society's School. He will be remembered by the present generation of pharmacists by the admirable address he delivered to the students at the opening of the Session in 1880.

Cough Mixture sold by a grocer at twopence per ounce was condemned inferentially at a West Bromwich inquest held last week to investigate the cause of death in the case of a child, aged two. A surgeon who gave evidence said the mixture was not a proper one to give a child, and the Coroner thought it was a great pity that medicine of that description could be purchased in such a way. Finally, the jury returned a verdict of "Death from natural causes," and recommended the Coroner to call the Home Secretary's attention to the way in which cough mixture was sold in the district, and requesting that steps be taken to place restrictions on the sale. The ingredients of the mixture did not transpire, but it was alleged that the maker was Mr. R. Brown, manufacturing chemist, of Spring Hill, Birmingham, whose name appears upon the Register of Chemists and Druggists. It can hardly be a source of satisfaction to him to have his name prominently mentioned in such a connection, for, according to the facts as published, he has lent himself to a practice which must tend greatly to harm both himself and other members of the craft, and all for the sake of a trifling profit on an objectionable transaction.

The First Huxley Lecture was delivered by ProfessorM ichael Foster on Monday, October 5, at Charing Cross Hospital Medical School Institution, in which the late Professor Huxley received the whole of his medical education. The lecturer said it must be borne in mind in respect to any science ancillary to medicine, that great as may be the practical usefulness of the facts embodied in the science, far greater is the worth of an adequate study of the science as a mental training. An ill-trained mind bungles with the facts which are before it, a well-trained mind can pick up the facts as it goes along. The methods of medicine, the mother of most of the sciences, are at the bottom of the methods of the children sciences; a training in the latter fits a man quickly for the use of the former. At the present day, physics, chemistry, biology, and physiology have each developed into a body of learning, capable, when rightly taught, of being used as instruments of mental training of great value, the right teaching being that by which in the laboratory the student is made to tread in the very steps of those who have built up the science. This is the chief justification of the study of these sciences being made a part of medical education. Reference was also made to the complexity of the progress of science, and the intricacy of the bearings of even a single scientific observation, and the lecturer concluded by a few words concerning the influence exerted by Huxley on physiology, and so on medicine. Debarred by circumstances from fulfilling his early desire to become a physiologist, Huxley was ever ready with a helping hand to others. If English physiology stands at the present day, as it appears to do, in a sound and hopeful position, that is in large measure due to Huxley's direct and indirect influence.

Death of Richard Jacobi.—We hear with much regret of the death of apotheker Richard Jacobi, formerly of Elberfeld, who will be remembered as one of the German pharmacists that attended the International Pharmaceutical Congress in London as representatives of the German Apotheker Verein in 1887. Though comparatively a young man Mr. Jacobi had been an invalid for some years and had on that account retired from business.

"On Patent Medicines" was the title selected by Mr. Morton Smale for his inaugural sessional address to the students attending St. Mary's Hospital, Paddington. This would have been published in our present issue, had not pressure on space prevented that being done. Proprietary medicines offered to the public adorned with Government stamps, were, of course, what were referred to under the more popular, but decidedly incorrect term, and it would be difficult to imagine a stronger attack on this crying evil than that delivered last week. But, unfortunately, the public will not yet read and profit by the address, and even medical men who prescribe secret proprietary preparations largely are not likely to be greatly influenced by Mr. Smale's remarks, if at all. Moreover, the remedy he professes—abolition of the Government stamp—is more likely to increase than diminish the evil. The public must be educated to avoid quack remedies, and the medical profession should take the lead in that direction. Perhaps if trained to do so whilst students, they may continue to cry in the wilderness after they have become qualified. Let us hope, therefore, that the students at St. Mary's have been permanently set in the right path.

Salters' Research Fellowship.—Under the heading of "official notices" in the current issue will be found an announcement inviting applications for this Fellowship, which was founded in 1894 by the Worshipful Company of Salters for the purpose of encouraging chemical research in the elucidation of pharmacological problems. The Fellowship is of the annual value of £100, and may be held for three consecutive years in the Pharmaceutical Society's laboratories. The regulations relating to the award of the Fellowship may be obtained from the clerk to the Company at Salters' Hall, but applications for the Fellowship must be sent to Mr. Bremridge, 17, Bloomsbury Square (as representing the Research Committee of the Pharmaceutical Society), before Saturday, October 24.

Friends of the late J. S. Linford on the Board of Examiners and elsewhere ought to rally to the support of his widow, who, they will regret to learn, is a candidate for an annuity from the Benevolent Fund. As will be gathered from the report of the Council meeting (see p. 331) held on Wednesday, it has been decided to elect three additional annuitants on the Fund. The election will be held on December 8, and of the four candidates proposed two are the unsuccessful candidates at last year's election and another is the widow of a former annuitant. Readers are reminded that one of the most practical ways of helping candidates is to send in increased subscriptions, and persuade friends to do likewise. Additional votes are thus rendered available, which may suffice to turn the scale in the event of a closely-contested election.

RE-OPENING OF THE SCHOOL OF PHARMACY.

The fifty-fifth session of the School of Pharmacy, Bloomsbury Square, was inaugurated on Monday last, when the prizes and certificates awarded to the students of the past session were distributed. The chair was taken by Mr. Walter Hills, President of the Pharmaceutical Society, who was supported by the majority of the members of Council, and there was also a large attendance of members of the Society and friends of the students, including many ladies. Sir Richard Quain and Sir Frederick Abel were amongst the visitors. The opening remarks of the President, in which he referred to the past history and immediate prospects of the Society's School, were listened to with marked attention, as was also the report of the Dean of the School, in which, again, fitting reference was made to the special circumstances attending the opening of the present session, and a graceful tribute paid to the professors who have retired from office. The presentation of the prizes occupied less time than usual, owing to many of the recipients not being present, but those who did come forward met with the usual encouragement both from the President and the audience. The address by Mr. R. Brudenell Carter (see page 309) was well worthy to take its place amongst the many sterling and thoughtful utterances which have been delivered on similar occasions within the same walls, and will well repay attentive perusal.

The formal opening of the fifty-fifth session of the School of Pharmacy took place on Monday afternoon, October 4.

Mr. Walter Hills, in opening the proceedings, said :—We have met here to-day with a two-fold object—first, to put the finishing touches on the work of the fifty-fourth session of the School of Pharmacy by the distribution of prizes and certificates to the successful students of that session ; and, secondly, to hear the address with which Mr. Brudenell Carter has kindly promised to inaugurate the fifty-fifth session.

The occasion is a particularly interesting one, as it marks a distinct epoch in the history of our School. Such being the case, I think I may venture to trespass on your patience by offering a few remarks by way of introduction. In the first place, I may perhaps remind you that the promotion of advanced education has been a distinctive feature of the Society's work since its foundation. From 1842 till the present day instruction in the sciences on which the art of pharmacy is founded has been provided within these walls. Our founders were fully impressed with the importance of this branch of their work, and their successors have loyally and liberally continued that work. It has always been felt that a scientific training was the most valuable and reliable capital for the young pharmacist, and the maintenance of a school to provide such a training has furnished to the outside world one of the strongest proofs of the vitality of the corporate body.

To-day we are closing what I venture to call the second volume of our educational record, and we are commencing the third. The first volume records the work of thirty-one years, during the whole of which period the Council had the full control of the School. For the first twenty-six years—viz., till 1868—the practice of pharmacy in this country was unrestricted, and therefore our students during those years were men who without the stimulus of compulsory examinations were so alive to the value of self-improvement that they gladly availed themselves of the instruction provided here, subsequently submitting to the test of a voluntary examination, and gaining thereby the honourable title of pharmaceutical chemist.

Volume two covers the period from 1873 to 1896. Examinations had now become compulsory, with the natural result that there arose a tendency on the part of many youths to regard those examinations as almost the sole object for which to study. Though some men holding these views may have entered our School, the majority have I think valued education for its own sake. The time allotted for the preparation for our two technical examinations was, however, too limited, especially during recent years.

But the chief feature of the period covered by the second volume was this, that during that time, that is from 1873, the Council transferred a considerable portion of the management and responsibility of the School to the teaching staff. I need not enter into the reasons which led the Council of that date to take this step, but I am glad to say that with the commencement of our third volume the present Council has reverted to the old arrangement, and has again thoroughly and completely identified itself with the entire working of the School.

But perhaps the most important feature of the coming session is the definite recognition of the necessity for a more extended period of study. Nothing has been more noteworthy during the last fifty years than the rapid advance of scientific knowledge and the improved condition of general education. The pharmacist of to-day cannot afford to lag behind in this onward movement, and he must therefore gird up his loins and endeavour to be in the van of those who value the advantages of scientific attainments. Examinations are gradually becoming more thorough and extended in their scope, whilst preparation for them, and for the keen competition of business and professional life, must be more systematic. Gradually we have come to the conclusion that a session of nine or ten months, hitherto considered a sufficiently long period to prepare for and pass both the Minor and Major examinations, is inadequate for that object, and for the acquirement of the knowledge which will remain with the student and will be of practical service to him in after life. The extension of time is made all the more necessary from the unfortunate fact that much of the technical knowledge formerly gained during apprenticeship has now to be furnished in the schools.

Arrangements have therefore been made that the elementry course here shall now extend over the whole of one session, and that concurrently with it there shall be an advanced course of six months for those who propose taking the higher qualification of pharmaceutical chemist. There will therefore be a curriculum of about fifteen months, at the end of which a diligent student of good abilities should be well prepared for his business and professional career. There will also be a research department in the School for those of our advanced students who are able and willing to devote themselves to original investigation. This department will be under the immediate direction of our professor of chemistry, and will, it is hoped, lead to results useful in themselves, and creditable both to the School and to the workers.

I think that we shall now have in this house a system of technical education which will be so near the ideal one as present conditions and circumstances will permit. And this system will have still more beneficial results when we succeed in our desire to raise the standard and scope of our Preliminary examination, which at present is very inadequate. To sum up these somewhat discursive remarks it is only necessary to add that the first two volumes of our educational work record the names of many whose subsequent careers have not only clearly proved that the training received here has been very valuable to them, but have also reflected credit on the School which supplied that training. May the record of the third volume, the preface of which will to-day be written, worthily maintain the traditions of our School.

The Dean's Report.

The President then called upon Professor Greenish to read his report as Dean. This was in the following terms :—

As Dean of the School of Pharmacy I have much pleasure in reporting that the past session has been an unusually prosperous one for the school. No fewer than ninety-nine students attended the various classes, the majority taking complete courses embracing several classes. This is the largest entry since the change that was made in the curriculum of study some years since. The teaching staff regard this increase in the number of students with great satisfaction.

In the department of chemistry Professor Dunstan reports that the total number of students who attended his lectures on chemistry during the session was seventy-four. The number that attended the First or Elementary Course was fifty-seven, and the Second or Advanced Course forty-one. At the examination held at the conclusion of the First Course the Bronze Medal was awarded to Mr. G. Senter, and Certificates of Honour to Mr. H. Wilson and Mr. J. Hamerton. At the sessional examination the Silver Medal was gained by Mr. H. Wilson, and Certificates of Honour by Mr. P. Stamp, Mr. R. Payne, and Mr. G. Senter. The attendance at both the courses of lectures on chemistry and at those on physics given by the assistant-lecturer, Dr. Jowett, was excellent through-

out the entire session, whilst the conduct and general behaviour of the students was all that could be desired.

Professor Attfield reports that there have been sixty-eight students working in the laboratory in his charge, that their conduct has been satisfactory, their attendance fairly regular, and that on the whole they have been more than usually hard-working. At the end of the session eight students competed for the sessional Silver Medal, which was carried off by Mr. G. Senter, Certificates of Honour being gained by Messrs. J. A. Dewhirst, F. Stamp, and E. A. Umney. At the end of the winter course the Bronze Medal was awarded to Mr. G. Senter, and Certificates of Honour to Messrs. J. A. Dewhirst and F. Stamp.

Professor Green reports that in the classes for botany, work has been well maintained throughout the session. At the end of the winter course the Bronze Medal was gained by Mr. J. A. Dewhirst, Certificates of Honour being awarded to Mr. F. U. Stamp and W. N. Ellis. At the sessional examination Mr. J. A. Dewhirst succeeded in carrying off the Silver Medal in addition to the Bronze Medal of the winter course, Certificates of Honour being obtained by Messrs. E. C. Spurge, H. Wilson, and G. Senter.

On my own behalf I have to report that during the session sixty-five students attended the classes in materia medica and histology. The attendance was fairly regular, whilst the conduct and work done was unusually satisfactory. At the end of the winter course the Bronze Medal was gained by Mr. G. Senter, and the Certificate of Honour by Mr. J. A. Dewhirst. The sessional Silver Medal was awarded to Mr. J. A. Dewhirst, Messrs. G. Senter and H. Wilson obtaining Certificates of Honour.

Mr. Ince reports that the department of pharmacy has been in a satisfactory condition during the past session. Fifty students attended the winter course of the Theory and Practice of Pharmacy, and twenty-four the summer course. For practical laboratory work there were forty-seven entries during the winter and eleven in the summer. The Bronze Medal was awarded to Mr. H. Wilson, and the Silver Medal at the close of the session to Mr. E. C. Spurge.

Since the conclusion of the session important changes have been made in the course of study to be pursued by students in the Society's School, changes which the teaching staff regard with complete satisfaction. The time to be devoted to the elementary course has been somewhat extended, whilst that apportioned to the advanced course has been materially increased. As a result of these changes the advanced course will no longer succeed the elementary in the same but in the following session. There will, therefore, in future be two distinct but simultaneous courses in each session. By the extension of the time devoted to the second course, one of the chief difficulties under which both students and teachers have laboured for some years has been removed; there can be no doubt that the longer time will allow of the work being done in a far more thorough and satisfactory mannner.

Simultaneously with these changes in the course of study, changes have also been made in the teaching staff. The members of the staff that remain in office part with profound regret from the colleagues with whom they have so long and so harmoniously worked. Professor Attfield, who has occupied the chair of practical chemistry for the last thirty-four years, and Mr. Joseph Ince, to whom since 1883 the teaching of pharmacy has been entrusted, lay down their offices to enjoy a well-earned rest. They take with them the deep and sincere respect not only of their colleagues on the staff, but of the students one and all whose fortune it has been to work under their guidance.

Professor Dunstan leaves the Society's School and the Research Laboratory to undertake still more onerous and responsible duties in the laboratories of the Imperial Institute. In losing Professor Dunstan the staff feels that the School is losing not only one of the most able lecturers and teachers it has ever possessed, but one who has ever had the interests of the School at heart. His colleagues wish him every success, and feel assured that his sympathy with the Society's School and its work will ever continue.

Whilst regretting that necessity compels them to part from their valued friend, the staff desire to extend a hearty welcome to their new colleague, Dr. J. Norman Collie. They are convinced that the selection of the Society's Council has been most judicious. For their part they could not wish for a more energetic worker, or for a more genial colleague, and they have no doubt that Dr. Collie, ably seconded by Dr. Lapworth, who will occupy the position vacated by Dr. Jowett, will use his best energies on behalf of the students in the Society's School. They feel assured that the School of Pharmacy of the Pharmaceutical Society has before it a bright and useful future.

The Herbarium Prize.

Professor J. Reynolds Green next reported on the competition for this prize. In the present year three collections had been sent in, the first, by Mr. Giles, being so excellent in every respect, especially as to the manner in which the plants were prepared and mounted, that he had great pleasure in asking the Council to award it a silver medal. The two others were considerably behind, but the collections were awarded certificates.

Council Examination Prizes.

Mr. F. Ransom then read the following report on this examination:—

On behalf of the examiners in the competition for the Council Examination Prizes, I have the honour to report that eighteen candidates entered for the examination as compared with ten only last year. The increase in the number of competitors must be regarded with satisfaction as evidence of a wider ambition to share in the honours which are open to those who have obtained the Major qualification during the past session. Although only one candidate secured sufficient marks to qualify for the Pereira Medal, several others sent in very creditable papers, and the second and third candidates are fully entitled to the silver and bronze medals which have been awarded to them. In the subject of materia medica several of the papers gave evidence of careful work, and compared with those which I have examined in previous years in this competition I consider that a distinct advance is to be noted. In some cases there were indications that the candidates had not confined their attention to text-books, but had also followed current work and gained some insight into the results of recent research. My colleague, Mr. Seward, reports that the answers to the botanical questions were on the whole very satisfactory, and gave evidence of careful preparation on the part of the candidates. A question in the natural history or biology of plants was not answered so fully or accurately as those dealing with systematic botany, physiology, or anatomy. While realising the importance of a knowledge of plant anatomy and physiology, it is advisable that some attention should be given to biological questions. It is much too frequently the case that a student is familiar with microscopic details and facts learnt in the laboratory and lecture-room, but ignorant of such botanical knowledge as may be easily acquired by observation in the field.

The medals were then presented to the following:—

I. PEREIRA MEDAL (SILVER); and Books value £5, presented by the late Thomas Hyde Hills.

George Senter.

II. PHARMACEUTICAL SOCIETY'S MEDAL (SILVER); and Books value £3, presented by the late Thomas Hyde Hills.

Edward Charles Spurge.

III. PHARMACEUTICAL SOCIETY'S MEDAL (BRONZE); and Books value £2, presented by the late Thomas Hyde Hills.

Francis Frederick A. Tunbridge

Jacob Bell Memorial and Manchester Pharmaceutica Association Scholarships.

Mr. Bascombe presented the following report on these examinations:—

On behalf of my colleague and myself I have to report that for the Jacob Bell Memorial Scholarship thirty candidates entered—8 in London, 2 in Edinburgh, and 20 at the various local centres. I am pleased to be able to state that one-third obtained sufficient marks to qualify for the scholarship, and the two successful candidates, both hailing from the provinces, reached a very high standard, having been credited with about 86 per cent. of the maximum number of marks obtainable. As regards the Manchester Scholarship, one candidate came forward and obtained the requisite number of marks. It is much to be regretted that as this scholarship has not been awarded for the past two years there should have been again only one competitor.

The successful candidates for the Jacob Bell Memorial Scholarships are :—

Harold Evan Matthews, and
Frederick Alfred Upsher Smith.

The Manchester Pharmaceutical Association Scholarship has been awarded to

Thomas Oldham Barlow.

The Redwood Scholarship.

The President announced that the Redwood Scholarship had been awarded to

Mr. Wilfred Lear.

Presentation of Prizes and Certificates.

The President next presented the prizes and certificates to such of the successful students of last session as were present :—

List of Prizemen.

James Hamerton.
Certificate of Honour—1st Course—Chemistry.

William Neale Ellis.
Certificate of Honour—1st Course—Botany.

Ernest Albert Umney.
Certificate of Honour—Session—Practical Chemistry.

Roger Payne.
Certificate of Honour—Session—Chemistry.

Edward Charles Spurge.
Certificate of Honour—Session—Botany.
Silver Medal—Session—Pharmacy.

Francis Underwood Stamp.
Certificate of Honour—1st Course—Practical Chemistry.
Certificate of Honour—1st Course—Botany.
Certificate of Honour—Session—Practical Chemistry.
Certificate of Honour—Session—Chemistry.

Harold Wilson.
Certificate of Honour—1st Course—Chemistry.
Bronze Medal—1st Course—Pharmacy.
Silver Medal—Session—Chemistry.
Certificate of Honour—Session—Botany.
Certificate of Honour—Session—Materia Medica.

John Arthur Dewhirst.
Certificate of Honour—1st Course—Practical Chemistry.
Bronze Medal—1st Course—Botany.
Certificate of Honour—1st Course—Materia Medica.
Certificate of Honour—Session—Practical Chemistry.
Silver Medal—Session—Botany.
Silver Medal—Session—Materia Medica.

George Senter.
Bronze Medal—1st Course—Practical Chemistry.
Bronze Medal—1st Course—Chemistry.
Bronze Medal—1st Course—Materia Medica.
Silver Medal—Session—Practical Chemistry.
Certificate of Honour—Session—Chemistry.
Certificate of Honour—Session—Botany.
Certificate of Honour—Session—Materia Medica.

Mr. Hanbury's Gifts of Books.

The following prizemen were presented with the books mentioned, which are given by Mr. Thomas Hanbury in memory of his brother, the late Daniel Hanbury, F.R.S. :—

To George Senter, 1st Prizeman in Practical Chemistry, copy of 'Pharmacographia' and 'Science Papers.'

To John Arthur Dewhirst, 1st Prizeman in Botany and Materia Medica, copy of 'Pharmacographia' and 'Science Papers.'

To Harold Wilson, 1st Prizeman in Chemistry, copy of 'Pharmacographia and 'Science Papers.'

To Edward Charles Spurge, 1st Prizeman in Pharmacy, copy of 'Science Papers.'

Inaugural Address.

After having distributed the prizes and certificates, and the books presented by Mr. Hanbury and the late Mr. Thos. Hyde Hills, with a few congratulatory words in each case, the President called upon Mr. R. Brudenell Carter to deliver the inaugural address, the text of which will be found at page 309 of this week's Journal.

At the conclusion of the address,

Sir Richard Quain, Bart., moved a vote of thanks to Mr. Brudenell Carter for the address, which he described as one of the most interesting and instructive he had ever listened to, and he hoped it would receive attention far and wide.

Sir Fred. Abel seconded the motion, though he said he did so with some trepidation, as he was not at all sure he could select exactly the proper words in which to clothe his thoughts. When a student under the late Dr. Hoffmann, he found him, though a German, a very keen critic of English, and had endeavoured to profit by the good advice he gave him.

The vote of thanks having been carried unanimously,

Mr. Brudenell Carter briefly responded, and the formal proceedings terminated. The members and friends then proceeded to partake of refreshments, and to inspect the laboratories and arrangements of the School and other departments in the Society's premises.

SCHOOL OF PHARMACY OF THE PHARMACEUTICAL SOCIETY.

TIME-TABLE FOR STUDENTS

ELEMENTARY COURSE.

Day.	Morning.		Afternoon.	
Monday.....	9.30.	Physics Lecture	2.30	Pharmacy Lecture.
	11.0	Practical Chemistry....	3.30	Practical Pharmacy.
Tuesday	9 30	Chemistry Lecture	2.30	Dispensing Lecture
	11.0	Practical Chemistry....	3.30	Practical Dispensing.
Wednesday ..	9 30	Chemistry Lecture	2·0 to 5.0	Practical Chemistry.
	11.0	Practical Chemistry....		
Thursday	9.30	Materia Medica Lecture	2.0 to 5.0	Practical Chemistry.
	11.0 to 12.0	Practical Materia Medica		
Friday	9.30	Botany Lecture	2.0 to 5.0	Practical Chemistry.
	11.0	Practical Chemistry....		
Saturday	9.30	Botany Lecture.....		No classes.
	10.45tol.15	Practical Botany		

ADVANCED COURSE.

Day.	Morning.		Afternoon.	
Monday.....	9.0	Practical Chemistry. ..	2.0 to 5.0	Practical Chemistry.
	12.0	Chemistry Lecture.		
Tuesday	9.0	Practical Chemistry....	2.0 to 5.0	Practical Chemistry
	12 0	Chemistry Lecture		
Wednesday ..	9 30.	Histology Lecture.....	2.0 to 5.0	Practical Chemistry.
	11.0	Practical Histology		
Thursday	9.0	Practical Chemistry....	2.0 to 5.0	Practical Chemistry.
	12.0	Physics Lecture.....		
Friday	9.30	Practical Botany		No classes.
	12.0	Botany Lecture.		
Saturday	12.0	Botany Lecture		No classes.

Students are requested to be in their seats at least five minutes before the commencement of each lecture.

PHARMACEUTICAL SOCIETY

MEETING OF THE COUNCIL.

WEDNESDAY, OCTOBER 7, 1896.

Present:

Mr. Walter Hills, President.
Mr. John Harrison, Vice-President.

Messrs. Allen, Atkins, Bateson, Bottle, Carteighe, Gostling, Grose, Hampson, Johnston, Martindale, Newsholme, Park, Savory, Southall, Storrar, Symes, and Young.

The minutes of the August meeting were read and confirmed.

Letters of Thanks.

The President next read the following letters:—

Mr. Joseph Ince wrote from St. Stephen's Avenue, Shepherd's Bush:—"I thank you for the annuity of £100 which you have so kindly made in my favour. I accept it—as I am sure it was intended—as a mark of goodwill and esteem, the value of which I fully recognise. I am by no means indifferent to the honour which the gift implies. Though in comparative retirement, I hope, as occasion may offer, to continue to promote the welfare of the Society. Work in connection with its educational affairs has been for me a source of great enjoyment, and I sincerely hope that the reorganisation of the School will realise all that the Council and the members generally may desire."

Professor Henry G. Greenish also wrote accepting the chair of materia medica and pharmacy, and tendered his thanks for the honour done him in offering him the appointment.

The Late Mr. Samuel Betty.

The President then said that since the last meeting death had deprived them, on August 27, of a former member of the Council, Mr. Samuel Chapman Betty, a gentleman who was better known to some present than to himself, though he had some acquaintance with him. He was a man of high culture and a very excellent speaker, and was much appreciated by his colleagues whilst a member of the Council, from 1871 to 1879. About the time he left the Council he also retired from business, and since then had lived the life of a country gentleman, being partly interested in the breeding of pigeons, on which subject he was a great authority. With the approval of the Council he would write to Mrs. Betty a letter of sympathy with her and her sons in the affliction which had befallen them.

Mr. Hampson said he knew Mr. Betty very well and highly valued his friendship. In the early days referred to by the President there were many occasions on which he took a different view from Mr. Betty, and he had several times been struck with the remarkable influence which that gentleman had over his colleagues, and the persuasive character of his elcquence.

Mr. Atkins said he also knew Mr. Betty very well, and he was much grieved to hear of his decease. His colleagues in the days referred to appreciated very highly the refined eloquence of which he was a master. He was brought up in France, and had a thorough acquaintance with the French language, as well as with English. Two years ago, when passing near his residence in Devonshire, he was informed by the driver of the coach that Mr. Betty was one of the greatest "pigeon men" in the world. He much regretted not being able to see him then or on a subsequent occasion when he called at Salisbury on his way to London.

Mr. Carteighe said he might be allowed to go a little farther back than previous speakers, for he knew Mr. Betty under circumstances which possessed historic importance. At the time of the great battle between the outsiders and insiders which preceded the passing of the Pharmacy Act of 1868, Mr. Betty took a prominent position amongst the former, and he was happy to think that he (Mr. Carteighe) was the means of his conversion. Mr. Betty's influence was so great that a number of his friends who were also antagonistic to the Society were similarly brought into agreement, and in the result they were able to go to Parliament with a united front. Mr. Betty had been one of the most active and intelligent of their antagonists, and he believed that his antipathy was very greatly due to the fact that many years before he had sent in an application for membership, and the then Secretary being mentally unwell, he never received any reply. Not unnaturally he brooded over this slight, as it appeared to him, though he only mentioned it six years afterwards, when he (Mr. Carteighe) approached him with the object of showing that the Society was not, as some represented, one simply for the benefit of West-end pharmacists. He did not find it very difficult to convince him that at any rate the younger examined men were desirous of extending the benefits of the Society to the whole trade, and thenceforward he became one of its strongest adherents. When the fact he had just mentioned was made known, the then President, Mr. Sandford, and Mr. Elias Bremridge ransacked the records, and found in a box the application of Mr. Betty and many other of his friends, who were eligible to be pharmaceutical members, and they were immediately elected and became some of the most loyal friends of the Society.

After a few words from Mr. Gostling, the suggestion of the President was unanimously agreed to.

Diplomas.

The undermentioned, being duly registered as Pharmaceutical Chemists, were granted diplomas, stamped with the seal of the Society:—

Cherry, Frederick.
Daniels, Herbert Joseph.
Dewhirst, John Arthur.
Dixon, Rowland.
Johnson, John Richard.
Macintosh, Robert.
Sargeant, Fredk. Pilkington.
Scurlock, David.
Ware, Alan Henry.

Election of Members.

The following, having passed the Major examination, and tendered their subscriptions for the current year, were elected "Members" of the Society:—

Cherry, Frederick, Bloxham. | Macintosh, Robert, Kennington.
Ware, Alan Henry, Exeter.

The following who were in business before August 1, 1868, having tendered their subscriptions for the current year, were elected "Members" of the Society:—

Nock, James, Birmingham. | Savage, John, Plaistow.
Vinson, Edward, Maidstone.

Election of Associates in Business.

The following having passed the Minor examination, being in business on their own account, and having tendered their subscriptions for the current year, were elected "Associates in Business" of the Society:—

Dean, Herbert, Dosborough.
Hays, Frederick Arthur, Halesowen.
Heekes John William, London.
Morrison, Andrew, Polokshields.
Wilson, Robert William, Gateshead.

Election of Associates.

The following, having passed their respective examinations and tendered or paid as "Students" their subscriptions for the current year, were elected "Associates" of the Society:—

Minor.

Alford, Edward, Plymouth.
Barnett, Henry, Folkestone.
Bell, Arthur Henry, Mansfield.
Bennett, William, Bath.
Dennis, James Edward, Broadstairs.
Drust, John Hubert, N. Ormesby.
Edwards, George Nelson, N. Elmham.
Fothergill, James, Lancaster.
Hollow, Daniel, St. Ives.
Lumley, Harold, New Cross.
Mandelson, Samuel Cohen, London.
Morris, Harry Barker, Bilston.
Palk, William Harold, Totnes.
Pratt, Charles Percy, Warwick.
Robinson, John L., Bournemouth.
Sexton, William Frederick, Blackpool.
Shirtliff, William Edward D, London.
Spear, Frederick Augustus, Plymouth.
Spencer, Wm. F., Stratford-on-Avon.
Taylor, Abraham, jun., Ecclesbill.
Tweedy, Sidney C. G., Northwich.
Wallis, James Samuel, Hayle.
Wells, John James, Harrogate.
White, David, Upper Weston.
Winstanley, Thomas Harrison, Wigan.
Woodhouse, George Ernest, Bedale.

Modified.

Lynn, Robert George, London.

Election of Students.

The following, having passed the First examination and tendered their subscriptions for the current year, were elected "Students" of the Society:—

Black, Thomas Kennedy, Aberfeldy.
Cain, John, Douglas.
Chapman, James G., Manchester.
Cooper, Harry Percival, Wimbledon.
Crofts, Lionel G., Hucknall Torkard.
Dewar, A. Owen C., Cupar, Fife.
Dier, George Hugh Fielden, Mayfield.
Draper, Thomas, Uppingham.
Fairfoot, Robert, Leeds.
Freer, Arthur Harry, Uppingham.
Hay, James Archie J., Edinburgh.
Hodder, Robert Barry, Reading.
Holliday, William Elliott, Preston.
Hovenden, Sydney Churcher, Croydon.
Hughes, Charles James A., London.
Jones, Humphrey Richard, Llangollen.
Jones, Richard Henry, Penkridge.
Loney, Sidney Thomas, Eltham.
Morgan, Howard Houlston, Rhayader.
Mortimer, Henry, Batley.
Napier, Duncan S., Junr., Edinburgh.
Newell, William Robert, Southsea.
Ritchie, David French, Southsea.
Roberts, W. H., Ashton-in-Makerfield.
Rothwell, Herbert, Stockport.
Sadleir, Horace Sutton, Gloucester.
Scanlan, Charles Edward, Urmston.
Sykes, Archibald, Harrogate.
Thomas, William, Panteg.
Wallis, Hugh William, Cambridge.
Warner, Stafford Allen, Langport.
Williams, John Ralph, Falmouth.
Young, William Frank, S. Tottenham.

Restorations to the Register.

The names of the following persons, who have severally made the required declarations and paid a fine of one guinea, to be restored to the Register of Chemists and Druggists:—

Evan James Evans, 63, North Parade, Aberystwith.
Robert Tait Hawera, Taranaki, New Zealand.

Several persons were restored to their former status in the Society upon payment of the current year's subscription and a nominal restoration fee of one shilling.

Finance Committee.

The report of this Committee was in the usual character, and recommended the payment of sundry accounts.

The President (as Chairman of the Committee), in moving the adoption of the report and recommendations, said there was nothing to which he need call attention, what was reported upon being in the ordinary course of business; but should information be required on any particular point, he would be glad to answer questions. The Council would probably be interested and pleased to hear that a letter had been received from Mr. John Bain, on behalf of the Liverpool Local Committee in connection with the British Pharmaceutical Conference, lately held in that city, forwarding a cheque for ten guineas, being part of the balance of an entertainment fund raised in respect of the Conference, and asking that the sum should be added to the Benevolent Fund of the Society, and the votes in respect of it placed in the name of Mr. Theodore H. Wardleworth, as a recognition of his services as the Local Secretary of the Conference.

Mr. Martindale said he should have pleasure in proposing that their Liverpool friends be thanked for their kindness, and expressed his gratification at noticing that at the last meeting of the Council, when he was unable to be present, recognition was made of the activity, courtesy, and kindness of those who locally interested themselves in preparing for and receiving the Conference.

Benevolent Fund Committee.

The report of this Committee recommended grants to the amount of £78 in the following cases:—

A registered Chemist and Druggist who had grants in 1893 and 1894, and who is only able to do very little for his support. (Rawcliffe Bridge.)

A registered Chemist and Druggist who has had four previous grants. (Portsmouth.)

A Pharmaceutical Chemist member, aged 78. (Romsey.)

A former Associate and Member who had a grant last year. (Chatteris.)

The widow of a Member of the Society and of the Board of Examiners. She is ill and without means. (Bridlington Quay.)

A registered Chemist and Druggist who has had three previous grants. (Liverpool.)

The widow of a registered Chemist and Druggist who has had seven previous grants, the last in 1892. (London.)

One case was deferred for further information, and three others were not entertained.

The Secretary submitted a statement showing that there are now forty-five annuitants on the list, four having been added in December, and four having died during the year. The Committee having considered the financial expediency of electing annuitants in December next, recommended that three additional annuitants be elected, and that the election take place on Tuesday, December 8.

The following were unsuccessful at the last election:—

Ramsden, George (age 70), Newport, Salop,
Young, Tonkin (age 68), Barry;

and the Committee recommended that the following, who had been deemed to be most necessitous, be placed on the list of approved candidates:—

Board, Mary (age 64), Cheltenham.
Linford, Eliza Sarah (age 78), Bridlington Quay.

The Secretary reported the death, on August 24, of Charles G. Harvey, Levenshulme, elected an annuitant in 1891, aged 83; and of Samuel F. Davis, Southend, on August 8, elected an annuitant in 1890, aged 79.

Mr. Bottle (as Chairman of the Committee), in moving the adoption of this report, said the Committee had an unusually long meeting yesterday, largely consequent, he fancied, on having two months' instead of but one month's business to attend to; otherwise their deliberations were of the ordinary character. There was one case to which he desired to make special reference—that of the widow of a gentleman for many years an active member of the Society, and one of their Board of Examiners, a case on which, he remarked, he could not trust himself to speak further than to point out that they recommended a grant, which he should be pleased to see take a larger and more permanent form.

Mr. Atkins said he should like to add a word on the case so feelingly alluded to by Mr. Bottle, and to say that, well knowing the circumstances, he cordially joined in the expression of a hope that before long their assistance would be of a more permanent character. He ventured to think that their time yesterday was so fully occupied, not so much in covering arrears as in facing difficulties which, he was forced to come to the conclusion—he wished it were otherwise—they must expect to increase rather than diminish. As time went on he felt painfully sure that the pressure which was being brought to bear on all branches of trade could not fail to have its effect on their own, and that the changes passing over every kind of business would be reflected on their own, and lead to increasing demands on their Benevolent Fund. Several of the cases now before the Council, he believed, were largely, if not solely, attributable to the fact that many worthy people were having their very lives crushed out by the inexorable law now at work, and tending to the survival, he feared, not so much necessarily of the fittest as of the strongest.

The Proposed Election of Annuitants.

On the subject of the proposed election of three annuitants, Mr. Bottle, in proposing the adoption of this part of the report, expressed his own regret and that of his colleagues on the Committee, that although they had lost four annuitants, in reviewing the condition of their finances, they did not feel themselves justified in recommending the Council to go beyond the names they had brought up. In consequence, perhaps, of the pressure to which Mr. Atkins had referred, there would be no doubt that their Benevolent Fund was not keeping pace with the increased and increasing demands made upon it. No doubt they would have to raise more money next year, and possibly their annual collections would put them in better form; but that was a matter for the future, which could be left to be dealt with when the time arrived.

Mr. Hampson expressed his disappointment that the Committee, should they have considered it, had not reported on the result of their consideration of the instructions given to them in August last.

Mr. Atkins said they had considered the matter.

Mr. Hampson said he was equally disappointed in finding that only three annuitants were recommended. Notwithstanding the wail they were continually hearing as to the Fund, he had hoped that, as they were about £50 relatively better off than at this time last year, and as four vacancies had occurred, they would have had the courage to recommend at least that number. The very fact of the conversation they had heard that day, consequent on the painful case which came before the Committee, showed

the tendency of things, and at the risk of continuing to be considered a disagreeable person, he must continue to enforce what many, he knew, regarded as a sort of fad of his, recognising, as he did, that many of the fads of the past had become the accepted principles of the present. He left his ideas, therefore, in the hands of the Committee.

Mr. Storrar said he should like to add his regret to those already expressed that the Committee had not seen its way to recommend a larger number of annuitants. He supposed, however, it was felt the funds would not admit of it. On looking at the abstract of the financial position which was before them, he came to the conclusion that there need be no reasonable apprehension on that ground, as, quoting from this statement, he found they were in a relatively better position to-day than they were at this time last year, and that if their receipts should continue at the relative rate for the rest of the year, there need be no fear on that point.

Mr. Bottle, however, said he thought Mr. Storrar had not fully apprehended the figures and their bearings on the exact position.

Mr. Atkins said he desired to assure their Treasurer that his suggestion, so far from having been overlooked, was very fully and carefully considered by the Committee. For himself, and he thought he could say for his colleagues, he regretted to differ from Mr. Hampson, because they were convinced of the high motives by which he was actuated. They had not been converted from any want of sympathy with him or respect for the views he entertained, but solely through regarding the whole matter as one of practical arrangement, and coming to the conclusion that if they departed from the rule of representation following contribution the funds would suffer. Whether the day would ever come when the system of election could be discontinued, he would not say; but he thought it would be perilous to do so at the present moment, especially in view of the special decennial appeal which would be made next year. The matter was carefully considered, and though he was not prepared to say that the Committee was unanimous, he felt sure that if a vote had been take the decision would not have been in favour of Mr. Hampson's view. The figures were carefully gone into, and he did not think the Committee would have been justified in recommending the election of four annuitants. £560 had to be paid immediately, and a like sum in January, which was not yet in their possession, and, unfortunately, the income was somewhat decreasing. Grants to the amount of £78 had just been made, and he did not want to see that portion of the work in any way crippled, for there was a constant inflow of pressing cases, and he feared they would increase.

Mr. Bateson said he was not acquainted with any fund of a similar nature which was more wisely administered than the Benevolent Fund, and it had been a great pleasure to him since he had been on the Council to notice the kindly way in which all the cases were considered and dealt with. He thought it would be helpful if the Local Secretaries would call on the chemists in their neighbourhood and point out to them what large sums were paid out of this Fund in annuities, and in helping their poorer brethren. He feared there would be even more need for its good work in the future. He did not think this discussion would be in any way hurtful to the Fund, and hoped on the contrary that, more attention being called to it, the contributions would be increased.

The Vice-President said he had not changed his views as to the best method of administering the Fund, and was entirely in accord with Mr. Hampson, but he could not think that at this moment when an election was just going to be held it would be wise to depart from the decision at which the Council had deliberately arrived, viz., that the election should take place on the lines laid down years ago. He was prepared to discuss an alteration of the method, but not to take the election out of the hands of the subscribers by what might appear to them as a side wind, viz., deciding to elect four and having only four approved candidates. No doubt there were several other persons who were eligible. The stability of the Fund depended on the confidence of the subscribers, and if that confidence were shaken, the Fund would dwindle. He so highly valued the work which was being done that he hoped to see a large accession to their receipts, and deprecated, therefore, anything which might tend to shake the confidence which was now reposed in the Council. He had much sympathy with Mr. Storrar's view, but he did not think they were justified in expending all their funds on annuities. If casual grants were called for to the amount of £40 a month, a considerable sum must be retained in hand for that branch of the work, which was of equal, if not greater, importance since it was often the means of lifting a man from a temporary difficulty, and enabling him to earn a living for himself and his family. He hoped, therefore, the report of the Committee would be accepted as it stood, and that the members generally, seeing the care and anxiety with which the Fund was administered, would come forward with greater liberality.

Mr. Symes, as a member of the Committee, assured the Council that every care was taken to come to a right decision as to the number of annuitants to be elected. Several more names might have been put on the approved list, but the Committee desired to save those who had very little chance of election the expense and anxiety of canvassing. In that way the Committee did very useful work in the direction desired by Mr. Hampson. In dealing with the figures some gentlemen seemed to have forgotten the £78 which had just been granted, and did not of course appear in the accounts. It was only by the aid of money which had not yet come in, that the January annuities could be paid. He feared the calls on the Fund would continue to grow, and that if it were decided to elect the maximum number of annuitants, the amount of such annuities would have to be reconsidered.

Mr. Carteighe hoped the question just mooted by Mr. Symes would never be raised. If an annuity were given at all it should be enough for a man to live upon, and it was ridiculous to expect that a man who had been a chemist and druggist could live upon £30 a year, especially if he were in ill-health. The discussion had wandered a little, and he wished to bring it back to the point. Mr. Hampson suggested that as there were only four approved candidates, they should all be elected, his motive being partly a generous one, and partly to avoid the expense of an election. Looking at the matter broadly, he took it that the Committee had picked out the two most deserving cases on the list, and adding them to the two re manets from the last election, gave an opportunity to the subscribers to elect three out of the four; desiring at the same time to retain sufficient money in hand to make substantial casual grants to suitable cases. He thought Mr. Hampson's observations on the mode of election must commend themselves to all right-minded people, but, unfortunately, in some respects, benevolence was a business, and he feared that if the mode of election were altered, many of the subscribers would say it was not a business-like proceeding, and some might think that the Council had stolen a march upon them if the whole four approved candidates were elected. His view was that the whole of the year's income should be expended, either in annuities or casual grants, for the moment they began to save money the income would decrease. But it must be remembered that casual grants might, to some extent, replace annuities. There was nothing to prevent the Committee making such grants as it thought fit to those who were unsuccessful at the election. The best policy for the Fund was to be generous, keep up the amount of annuities and grants, and if the funds got low, make special efforts to raise them. There must be no going back.

Mr. Hampson said he did not want to steal a march in any way. It was simply that he thought there was an opportunity of saving expense, energy, and trouble by electing the only four approved candidates.

Mr. Gostling observed that the whole income of the year had been actually expended, and a little more.

Mr. Martindale said he thought an election was a great help to the Benevolent Fund, as reminding subscribers of the work they were doing.

The President remarked that no amendment had been proposed, and added that unless there were strong reasons to the contrary, he should always support the recommendations of a committee. There were two aspects to this matter — the politic and the financial. The Vice-President and Mr. Carteighe had dealt with the politic side, and very much expressed his own views; and with regard to the financial part, he entirely agreed with Mr. Carteighe that the whole income should be expended. On that ground he was rather sorry that the Committee had not been able to see thair way clear to the election of four annuitants, for he believed that as cases arose means would be found of raising money for them.

The report was then put and carried unanimously.

Demonstrators in the School of Pharmacy.

The President said that in pursuance of the authority given to him at the last Council meeting he had been in consultation with Professors Collie and Green, and upon their recommendation, and

having, as far as possible, ascertained the suitability of the gentlemen named, he had appointed Mr. Robert D. Littlefield as one of the demonstrators in chemistry, and Mr. Lloyd Williams as demonstrator in botany.

Report of Examinations.

The following report on the examinations was presented :—

October, 1896.

	Candidates.		
	Examined.	Passed.	Failed.
England and Wales :—			
Major	20	9	11
Minor	164	50	114
Modified	1	1	0

30 Certificates by approved examining bodies were received in lieu of the Society's First examination.

Local Secretaries.

The President called attention to the fact that the usual circular had just been sent out with regard to the nomination of Local Secretaries. The Council regarded these appointments as most important, the Local Secretaries being the connecting link between the members and the Council, and the relations between them depending to a large extent on the officers so elected. It was highly desirable, therefore, that the best man in the town or district should be appointed, and in order to attain this desirable result the members were asked to indicate their views through the medium of the nomination cards. If these cards were not filled up and returned, the Council had no indication of the wishes of the local members, and must not be blamed if by chance an unsuitable person were appointed. The ideal method of nomination seemed to him to be the calling of a meeting of the local members, and the nomination of some gentlemen by those so assembled. The greatest evil which that Society, in common with all others, had to combat was the apathy of members, who would not take the trouble to express their opinions when asked, and he hoped that these remarks would receive some attention from their friends in the country. Before sitting down he should like, on behalf of the Council, to thank all the Local Secretaries for their services during the past year. They were often able to do a very great deal of good work for the Society, and he knew that many of them did devote a large portion of their time and thought to the interests of the general body.

Corresponding Members.

The President read a letter which had been received from Mr. W. F. Carles, Consul for the Corea, thanking the Council for his election as corresponding member, and expressing his intention to do what he could for the Society. A letter was also received from Dr. A. Herrera, of Mexico, a corresponding member of the Society, announcing that he was sending for the Society's acceptance a copy of the 'Neuva Farmacopea Mexicana' (3rd ed.) just published. The President suggested that he be authorised to send a letter of thanks to Dr. Herrera for his very acceptable donation.

General Purposes Committee.

The report of this Committee—apart from the legal business—was read by the Secretary. It recommended that the Bell scholars be permitted to make application to the Council for free admission to the advanced course of study in the session ensuing that in which they had attended the elementary course; also that Mr. Barlow, who had been awarded the Manchester Scholarship, should be allowed to pursue his studies at Owens College, Manchester, instead of in the School of Pharmacy; and that the meeting of the Council in January next be held on the second, instead of the first, Wednesday in that month.

Mr. Carteighe having moved that these new recommendations be received and adopted, and this having been seconded by Mr. Hampson, who said he thought the course adopted by the Manchester scholar was a step in the right direction, the report was unanimously adopted.

The Council then went into committee to consider the legal part of the report, and on resuming the report and recommendations were received and adopted, and a resolution was passed authorising the Registrar to take proceedings against certain persons for infringements of the Pharmacy Act.

PHARMACEUTICAL SOCIETY OF IRELAND.

OPENING OF THE SESSION.

On the evening of Thursday, the 1st instant, the Winter Session of the Pharmaceutical Society of Ireland was opened at the Society's house, 67, Lower Mount Street, Dublin, by a lecture on the "New Photography," delivered by Professor Tichborne. There was a numerous attendance of members of the Society and visitors, including ladies. The chair was taken by the President of the Society, Mr. Wells, junior, who, before calling on the lecturer, referred to the improvements in the Society's system of pharmaceutical education which the Council had succeeded in making since the establishment of the Society twenty-one years ago. Their object was to turn out good practical men, who would not only be useful to the public, but would raise the status of the Society. In the course of some remarks addressed to the students, the President said they were at the present day expected to have a large stock of general knowledge. In the present day competition in every business was very keen, and that of the pharmaceutical chemist was no exception to the rule. The trade portion of his business was rapidly slipping from him, as with his small turnover and heavy expenses he could not compete with stores and other places in which many articles were sold at low prices. In the future, therefore, the pharmacist would have to look to the professional part of his business and to cultivate that to the best of his ability. Unfortunately the public was not inclined to pay him for his professional skill acquired after much labour and study, although he was as well entitled to be so remunerated as the medical man. It was unjust that he should be expected to make up a prescription for the mere price of the drugs. Want of skill and care in the making up of a prescription or the use of inferior drugs might reduce the skill of the best medical man and even cost lives. If the public wanted high-class pharmacy they should be prepared to pay for it.

Professor Tichborne, in the course of his lecture on the Röntgen Rays or "New Photography," said that, believing as he did that there would be a general application of that photography, he hardly knew of a more suitable adjunct to a pharmacist's business. Röntgen installations would not be found at hand in every country town to meet the requirements of the surgeon, and therefore the pharmacist should be prepared to step in with them. An account of the discovery of the x rays by Röntgen and of the latest improvements in the methods of producing and applying them was then given, with accompanying screen illustrations, showing how bullets, needles, etc., had been detected by the rays in the human brain and body. He (Professor Tichborne) himself had invented an instrument for detecting adulteration in articles when the adulterant was fluorescent, and the pure substance non-fluorescent. For the information of the ladies he might mention that Professor Röntgen was extremely good-looking, was between forty and fifty years of age, married, and of very unassuming manners.

The Vice-President, Mr. Downes, in moving a vote of thanks to the lecturer, said it was absolutely necessary nowadays for the young pharmacist to lay hold of the higher and more scientific portion of his art.

Mr. Robinson, ex-President, in seconding the motion, spoke to the same effect. The selection of the x-rays as a subject for their opening sessional lecture was a proof that pharmacists were determined to be up to date.

Sir Robert Jackson, C.B., and Surgeon Henston having borne testimony to the utility of the rays in surgery,

The motion was carried by acclamation, and the proceedings terminated.

TWENTY-FIRST ANNUAL MEETING.

On Monday evening, the 6th inst., at 8 o'clock, the twenty-first annual meeting of this Society was held at their house, 67, Lower Mount Street, the President, Mr. W. H. Wells, in the chair.

The following gentlemen, outgoing members of the Council, were re-elected without opposition:—Messrs. Edward Hodgson, J.P., William J. Baxter, George D. Beggs, John J. Bernard, Meredith R. Whitla, Robert Simpson, and Edward P. Murray, J.P.

The President delivered an address, in the course of which he expressed his regret that there were not more registered druggists on the Council. He compared the state of pharmacy in Dublin and Belfast before 1875 with that at present, and said the intentions of

the Pharmacy Acts had been so far as the convenience of the public was concerned, well carried out. The number of pharmaceutical chemists and registered druggists had increased, whilst that of apothecaries had diminished. The standard of examination had been raised from year to year, and was now as high as that of the medical bodies. Every country town of any size had at least one pharmaceutical chemist. The subscriptions to the Society showed a slight increase on those of last year, and they had on the roll in this year 182 members of the Society and 80 associate druggists, as against 177 and 73 in the preceding year. The Council had decided to form a Pharmaceutical Students' Society and to establish a reading-room. The Council had had a correspondence with the Local Government Board on the subject of contracts for the supply of drugs to Poor Law Unions being given to grocers and other unqualified persons, but no satisfactory result had been attained, and he feared that until Parliament met not much more could be done in the matter. Since 1875 the number of persons who had passed for the licence was 582; the number of pharmaceutical assistants 13; the number of registered druggists, 403; whilst 316 chemists and druggists had been registered without examination. To-day there were in Dublin thirty-two pharmacies, eighteen registered druggists' shops, a few apothecaries, and two limited companies acting as chemists. Belfast had twenty-four pharmaceutical chemists keeping open shop, and forty-eight registered druggists, as well as some surgeries. Some months ago the Council requested the Council of the Pharmaceutical Society of Great Britain to accept the Preliminary examination of the Irish Society in lieu of their First examination. The answer they got was that the Examiners had reported "that it was not expedient." That was not the answer they expected. Their Preliminary examination was of a very much higher standard, and contained many more subjects than that of the British Society. The action of the latter Society was a case of taking all and giving nothing.

Referring to the state of the law with respect to limited companies, the President remarked that it had been laid down by the Queen's Bench Division that none but a pharmaceutical chemist or apothecary could either compound or sell in the shop of a limited company. A qualified assistant would not do. But they knew very well that limited companies employed unqualified persons. The Society had reason to complain of the want of sympathy on the part of magistrates with their efforts to uphold the law. With respect to counter prescribing by chemists, an inquest was held some months ago on the body of a child for whom a pharmaceutical chemist was said to have prescribed. A discussion afterwards took place in the Press on the subject, in the course of which it was stated that counter prescribing was largely practised by members of the Society with the full knowledge of its leaders. There was not a shadow of truth in that statement. He believed that counter prescribing had greatly diminished. There might be a little of it, but it did not exist in the best conducted pharmaceutical houses in Dublin. As to the Council putting a stop to the practice, he could not find anything in their Acts that gave them the power to do so. If, however, it could be shown that they had the legal power to put it down, he would be for doing so. Let an Act be passed prohibiting medical men from dispensing, and unqualified persons from prescribing.

Mr. William Hayes moved a vote of thanks to the President for his address.

Mr. Robinson, in seconding the motion, said that pharmacy had made great strides during the past twenty-one years, and he believed that any of them who should survive for an equally long period of the future would see it make equally great strides. He fully concurred in what the President had said as to counter prescribing.

The motion passed unanimously.

Financial statements relating to the accounts of the Society, and also to the schools, were submitted and adopted.

Thanks were voted to the Treasurer, the auditor of the accounts, and the registrar, and the proceedings terminated.

Quinine Suppositories in Malarial Fever.—To obviate the discomfort which often follows the ingestion of large doses of quinine, Dr. Dunbar Brunton advocates the exhibition of the remedy in the form of a suppository, from 10 to 20 grains being given in a single suppository, the dose being repeated every four or six hours; by this means the full antiperiodic effects of the drug are obtained, but all nausea, dyspepsia, giddiness, and other unpleasant symptoms avoided.—*B. M. J.*, 29/8/749.

LEGAL REPORT.

CHEMISTS AND PRESCRIBING.

Strong Remarks at a Cornish Inquest.

At Pennance near Redruth, on Thursday, Oct. 1, an adjourned inquest was held on the body of Annie Frances Martin, aged 11, who died from a throat affection on the previous Saturday. It appeared that the deceased had been attended by Mr. Sampson Taylor Rowe, a chemist and druggist, of Redruth, who said the child died from congestion of the lungs and severe laryngitis. He denied it was a case of diphtheria, and the inquest was adjourned for a post-mortem examination to be made by Dr. A. E. Permewan.—Superintendent Beare now watched the case on behalf of the police.

Dr. Permewan, of Redruth, stated that he made a post-mortem examination three days after death. The body was considerably altered, the back and face were livid, and decomposition commencing. The brain showed nothing remarkable, except that it was congested and already becoming somewhat fluid. The mucous membrane of the mouth was swollen somewhat and had a covering of dry frothy mucus; in fact the membrane really was altered, but there was no membranous deposit. Therefore, so far as he could judge, it was not a case of diphtheria. The mucous membrane of the larynx and the wind-pipe were healthy. The lungs were most extensively congested throughout. The right lung at the apex was practically consolidated. The walls and valves of the heart were healthy. The liver was greatly congested and the kidneys congested, but otherwise healthy. His opinion was that the child died from acute congestion and inflammation of the lungs. He was assisted by Dr. W. Hitchens, who quite agreed as to the condition of things and the cause of death.

By the Coroner: He was not prepared to say absolutely that the prescription given by Mr. Rowe when the mother called was harmful, but it contained opium in small quantity, which he should not have prescribed himself. That was the only exception he could take to it. It was the kind of prescription given in the case of cold and to soothe a cough. The quantity of narcotic was certainly very small, and he was not prepared to say it would have had any injurious effects, but it was not usual to give opium even in a small quantity to children with lung affections.

Mr. Rowe said it was intended to allay inflammation of the throat.

Dr. Permewan, continuing, said applying poultices to the throat and chest would not have been injurious, and might have been useful. He might have blistered it himself, but it had been blistered considerably more than he should have done.

The Coroner: The woman went and told Mr. Rowe that her child was suffering from severe cold and inflammation, and on her statement he prescribed, and after he had seen the child he did not prescribe again. In your opinion, ought he to have prescribed again, and would a properly qualified man have prescribed again?

Witness: Very clearly, if I had been attending the case I should not have used opium, and it is clearly not good practice to do it.

The Coroner: Do you think the fact of the child having opium, even in small quantities, accelerated its death in any way?

Witness: I should be sorry to go so far as that, because my honest belief is this, that from what I saw there must have been on the Friday such extensive mischief that it was practically impossible for it to recover. I clearly believe that, but the opium diminished its chance rather than increased it.

The Coroner: Then you do not think the child's end has been accelerated through want of attention, on the evidence you have heard read to-day?

Witness: Well, it is a question what might have happened if the child had had medical attendance earlier.

The Coroner: But Mr. Rowe knew nothing about that?

Witness: Clearly not. I cannot think that the amount of opium the child had, had any effect one way or the other, but it was clearly not the right thing to have given even the minutest quantity of.

The Coroner: Have you had any cases of infectious disease notified to you as medical officer of health by Mr. Rowe?

Witness: No.

The Coroner: Is it competent for anybody else to give certificates of death beyond a medical practitioner or coroner?

Witness: No one but a practitioner can fill up the form, under a penalty; but there is nothing to prevent anyone writing anything on a blank sheet of paper. All deaths sent in that way are reported to me at the end of the month as being uncertified. The registrar is responsible in such cases.

The Coroner: Do you get many of these? Mr. Rowe informs us that he does supply a good many certificates to the registrar, and they are accepted.

Witness: I get a good number of cases, but I have no means of knowing whether Mr. Rowe or anybody else has attended them. I get a good number of deaths in the year which are not certified medically.

The Coroner: Is that satisfactory to you or not?

Witness: It is not at all satisfactory. If he has not a medical certificate the registrar is bound to satisfy himself that the person died naturally, and if he has not a medical certificate he is the man responsible, I take it. The question of infectious disease being attended by unqualified persons is really serious, because there is no notification to the medical officer.

The Coroner: It is most dangerous. Mr. Rowe tells us he has treated every kind of case, infectious and otherwise, and has given certificates which have been accepted by the registrar?

Witness: It is no doubt unsatisfactory. The reason why epidemics spread in this neighbourhood is that we do not know of half the cases which occur, because they are either not attended at all or by somebody who cannot inform us.

The Coroner, in summing up, said he thought it was quite clear the parent of this child did all she could, and when she found it getting very bad she sent for Mr. Rowe, whom she thought was a properly qualified man. If these people liked to call in unqualified people to attend them or their children, they could do it. There was nothing to prevent people having a quack, unfortunately, and only too frequently the calling in of an unqualified medical practitioner led to very serious results. It would be very difficult for the jury to say the child's death was accelerated by the treatment of Mr. Rowe. It would be difficult to bring in any other verdict than that the child died from natural causes. There had been far too many cases in that neighbourhood treated by unqualified people who had given certificates to the registrars, and the cases had been entered as uncertified. It was highly improper, and he hoped that this case might prevent any such thing occurring again. He heard a report out there some time ago that it was going on, and he told Sergeant Noy if anything of the kind occurred again, to report the matter at once to him, and he would hold an inquest, and they would expose the whole thing. This case Sergeant Noy heard of through a side wind, and no doubt if he had not made some fuss about it, the certificate would have been given to the registrar, and they would have heard nothing about it. But he did feel that a case like this was of the utmost importance, and would be a warning to unqualified people that they must not give certificates, and that if they attended these cases they did it at a very great risk.

The jury returned a verdict of "Death from natural causes," and expressed the opinion that it would have been better if Mr. Rowe had called in a properly qualified medical man if he saw the child was dying.

Mr. Rowe said he quite agreed with that. If it had been under any other circumstances, and had he thought there was a chance of saving life he should have done so.

To Distinguish Eucaine Hydrochloride from Cocaine.—If to 3·5 C.c. of a solution of eucaine hydrochloride 3 drops of 5 per cent. chromic acid solution are added, an immediate citron-yellow, distinctly crystalline precipitate is formed. Hydrochloride of cocaine under similar conditions gives no precipitate. The addition of 3 C.c. of 10 per cent. potassium iodide solution to 5 C.c. of a 1 per cent. solution of eucaine hydrochloride causes a milky appearance, and if left for a time the whole solution becomes converted into a crystalline paste, due to the formation of colourless scales of eucaine hydrodiodide. Solutions of cocaine hydrochlorate are not affected under the same conditions. The solubility of cocaine and eucaine hydrochlorides are widely different. Of the former 1 part dissolves in 0·75 parts of water at 15° C., while 1 part of the latter requires about 10 parts of water.—*Bull. Gén. de Thérap. Sec. Pharm*, i., 499.

CORRESPONDENCE.

All Articles, Letters, Notices, and Reports intended for publication in the Journal, Books for Review, and communications respecting Editorial matters generally must be Addressed "Editor, 17, Bloomsbury Square, London," and not in any case to individuals supposed to be connected with the Editorial Staff. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

Any Instructions from Members, Associates, and Students of the Pharmaceutical Society, with reference to the transmission of the Journal, should be sent to the Secretary — Mr. Richard Bremridge,— 17, Bloomsbury Square, London.

Business communications—including advertisements, orders for copies of the Journal, and instructions from Subscribers respecting transmission of same—must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London. Cheques and money orders should be made payable to "Street Brothers."

Correspondents who wish notice to be taken of their communications must write in ink, on one side of the paper only, and should authenticate the matter sent with their names and addresses—of course not necessarily for publication. No notice can be taken of anonymous communications.

Drawings for illustrations should be executed twice the desired size; clear, sharp lines being drawn with a pen and liquid Chinese ink. Shading by washes is inadmissible. Photographs can be utilised in certain cases.

Names and Formulæ should be written with extra care, all systematic names of plants and animals being underlined, and capital letters used to commence generic but not specific names.

Reprints of articles cannot be supplied unless authors communicate with the Editor before publication.

Prescribing and Dispensing.

Sir,—An anonymous correspondent has been good enough to send me, together with some personal remarks which are not to the point, your article on "Prescribing and Dispensing," in which my name is mentioned. Will you allow me in the first place to express my regret that my allusion to the grocery trade should be taken as an insult to those engaged in retail pharmacy; it most certainly was not intended as such, and it never occurred to me that the comparison of one perfectly honourable trade with another could give offence. The comparison was not, perhaps, very apt, but is it not a fact that nearly all the important pharmaceutical work is done in the laboratories of the great drug houses and pharmacies, whilst the work of the vast majority of retail chemists consists of "measuring and mixing," which requires no great skill? Hence my comparison.

You refer to my arguments as "illiberal" and showing "want of good feeling," but I fail to see illiberality in simply saying that whilst medical men have received sufficient instruction in materia medica and pharmacy to render them competent to undertake the simple dispensing they find themselves obliged to do—chemists have not received any instruction in diagnosis, and as diagnosis must come before "prescribing," they are therefore wrong in supposing themselves to be competent to prescribe. So far as good feeling is concerned, I need only say that, in common with many other medical men, I should be only too glad to be relieved of the trouble and expense of dispensing for poor patients, and would willingly send them to the chemists for medicine if it were practicable. If counter-prescribing were really nothing more than "a recommendation that might be made to one member of the public by another," it would be unassailable, but it has grown to such an extent that the less observant members of the public are not "able to distinguish persons who have been properly trained for the practice of medicine from others who have not," and the poorer classes almost universally look on the chemist as a legitimate practitioner. It is by no means uncommon for medical men to be called in to see a patient almost at the last moment, though he or she has been treated for days by a chemist; a man meets with an accident, goes to a chemist's shop, where he is "examined all over" and pronounced "all right"; he goes home, staggers about the house for a day or two, and on the fourth day a doctor is called in, only to find him dying of a fracture of the skull. A child with diphtheria is treated for four days by a chemist for "sore throat"; urgent symptoms appear, and the doctor is sent for as usual at the eleventh hour, and too late to do any good. These are not imaginary cases, and I repeat that similar ones are common. Not a few chemists appear to assume a knowledge of medicine and

surgery by using the stethoscope, the thermometer, the speculum, and even the bistoury. If this is not overstepping "the bounds of a chemist's pharmaceutical functions," I do not know what is. I quite agree with you that the great object is to remove obstacles to a satisfactory arrangement between doctors and chemists, and think that one great obstacle is the price which the poorer classes have to pay for medicine when prescribed by a doctor. My object in writing to the *British Medical Journal* was to point this out. Trusting you will pardon my writing at such length,

12, *Princess Square, Plymouth,* CHARLES J. COOKE.

September 29, 1896.

*** Dr. Cooke's disclaimer and his admission that a comparison between the pharmacist and the grocer is not very apt we accept with pleasure, as leaving little ground for difference; but we must remind him that the desirability of a separation between prescribing and dispensing is not limited to the case of "poor patients."—[ED. *Pharm. Journ.*]

DRY EXTRACTS WANTED.

Sir,—Aloes, catechu, opium, logwood, and liquorice, and many other naturally exuded gums and artificially prepared extracts are obtainable in the dry states of lump or powder. My own experience leads me to suggest that the artificially prepared extracts of scoparium, taraxacum, squill, jalap, and quillaia would also be equally convenient pharmaceutic preparations in the dry state, and would not be seriously impaired in energy by the process. If this suggestion should meet with the approval of experienced pharmaceutical chemists we shall, perhaps, soon see such preparations quoted in the medical drug-lists.

October 6, 1896. "MEDICUS" (60/11).

ANSWERS TO QUERIES.

[*Queries addressed to the "Editorial Department,* 17, *Bloomsbury Square, W.C.," will be replied to in the Journal as early as possible after receipt, but the Editor cannot undertake to reply to them through the post, nor is it always possible to publish answers the same week. Questions on different subjects should be written on separate slips of paper, each of which should bear the sender's name or initials. Readers requiring working formulæ for special preparations, and intimating their wants to the Editor, will be assisted as far as may be practicable. The word "parts," when used in formulæ, invariably indicates parts by weight. Anonymous queries will be ignored.*]

ETHEREAL TINCTURE OF CAPSICUM.—As originally recommended by Sir James Sawyer (*Lancet*, May 17, 1890, p. 1066) this was made exactly as the B.P. tincture, except that the rectified spirit officially ordered was replaced by pure ether, B.P. [*Reply to* J. B. M.—60/10.]

MAJOR EXAMINATION.—The examination occupies three days, two for the written and one for the practical part, whilst of late there has been an interval of three clear days between the two parts. Roughly speaking, therefore, you ought to reckon a full week for the purpose. [*Reply to* "ASSOCIATE."—60/7.]

CONCENTRATION OF BLOOD ALBUMIN.—This is effected by simple evaporation in shallow pans at a temperature of about 40° C. When dry the blood albumin will "scale." Where large quantities have to be handled, a vacuum apparatus would probably give more rapid evaporation. [*Reply to* "YOUNG ENQUIRER."—60/1.]

TO SET STOCKHOLM TAR AND SAWDUST.—It all depends what you are going to use your mixture for; you do not mention this important point. Perhaps melted black resin, mixed with the other ingredients while hot, and allowed to "set" will answer your purpose. [*Reply to* J. T. W.—59/42.]

MALTED FOODS.—(1) If good active malt is added to the biscuit flour, etc., the whole of the starch will become soluble in a very short time when the milk or water is added to it, provided the temperature is not too high; it should not exceed 140 F., or the diastasic power will be destroyed. It is preferable to add the malt after the other ingredients have been cooked. (2) Lentil flour is probably one of the chief ingredients in the food you mention. [*Reply to* R. H.—60/8.]

REMOVING SCAR FROM SEALING-WAX BURN.—It is to be feared your case is hopeless. Marks from burns after healing are very permanent. If not very extensive they sometimes disappear spontaneously in the course of some years, especially if on parts exposed to the light. It is always better in the case of hot sealing-wax not to remove the wax but to allow it to remain on the finger. This was impressed upon the writer in his apprentice days, and the value of the advice has been proved. The wax acts as a shield from the air. The success of the magnesia treatment is largely dependent on the rapidity with which it is applied to the burn in the first instance. [*Reply to* PIGMENT.—59/40.]

RECIPE FOR A CHEAP SAUCE.—Pimento, 2 drachms; cloves, 1 drachm; black pepper, 1 drachm; ginger, 1 drachm; mace, 15 grains; capsicum, 1½ drachm; mustard, 2 ozs.; salt, 3 ozs.; shallots, 2½ ozs.; treacle, 8 ozs.; tamarinds, 4 ozs.; curry powder, 1 oz.; vinegar, 2 pints; mushroom catsup, 10 ozs.; sherry, 1 pint. Take the whole spices and powder them immediately before use, add all the ingredients but the wine, and boil up for ten minutes, adding more vinegar to replace what is lost by evaporation, if any. Next add the sherry, macerate for fourteen days, then strain and bottle off. We do not pretend to imitate private or proprietary formulæ. [*Reply to* J.D.C.—59/39.]

FERMENTATION OF SAUCE.—You do not now mention the relative proportions of your ingredients, so that it is difficult to advise you. Certainly you need not boil for so long as half-an-hour, as probably you lose a good deal of your acetic acid by so doing. Ten minutes thorough boiling is quite enough, and after that you should make up the weight or measure lost by the addition of the strongest vinegar. The sugar and soy in your preparation should be boiled with the vegetable matter in the vinegar. The casks are best cleaned by thorough scalding, if possible by blowing live steam into them and afterwards washing round with a solution of bisulphite of lime. The addition of a little formalin would probably be unobjectionable, and would further act as a preservative (see *ante.* p. 269); but if you have enough vinegar present, and boil properly, this should not be necessary. [*Reply to* H. L.—59/38.]

CORRECTION.

THE ASSAY OF PEROXIDE OF HYDROGEN.—"A Reader" writes to say that the word "forty" in his letter last week (p. 307) should read "twenty." Reference to his letter shows that the word is not only clearly written "forty," but also deeply underlined. It is to be hoped that the writer is less careless in his assay work than in writing letters for publication.

PUBLICATIONS RECEIVED.

HUMPHRY DAVY: POET AND PHILOSOPHER. By T. E. THORPE, LL.D., F.R.S. Pp. 240. Price 2*s.* 6*d.* London: Cassell and Co., Ltd. 1896. From the Publishers.

J. LIEBIG AND H. KOPP'S JAHRESBERICHT DER CHEMIE. Pp. 479, Second half for 1891. Edited by F. FITTICA. Braunschweig: Friedrich Vieweg and Son. 1896. From the Publishers.

EVERYBODY'S MEDICAL GUIDE: A Handbook of Reliable Information and Advice. By M.D. (Lond.). Pp. 122. Cloth, 6*d.*; leather, 1*s.* London: Saxon and Co., 23, Bouverie Street, Fleet Street E.C. 1896. From the Publishers.

VERZEICHNISS NEUERER HEILMITTEL, MIT KURZEN BEMERKUNGEN ÜBER HERKOMMEN, ZUSAMMENSETZUNG, UND WIRKUNG. Gehe and Co., Dresden.

HANDELSBERICHT von Gehe and Co. September, 1896.

MARRIAGE.

DAVIES—LLOYD.—On September 23, at the St. Peter's Church, Lampeter, by the Rev. Daniel Jones, M.A., Vicar, assisted by the Rev. W. J. Evans, B.A., Curate, Mr. William Davies, A.P.S, Lampeter, to Miss Mary Emily Lloyd, eldest daughter of the late Alderman David Lloyd, Dolgwin House, Lampeter.

COMMUNICATIONS, LETTERS, ETC., have been received from Messrs. Attfield, Bradshaw, Bray, Butler, Cocker, Cocks, Cox, Davies, Forster, Hartness, Hill, Hudson, Ince, King, Lee, Marsh, Matthews, McVitæ, Reynolds, Rhoden, Rowell, Smith, Stocke, Turner, Walford.

COLLEGE OF SURGEONS

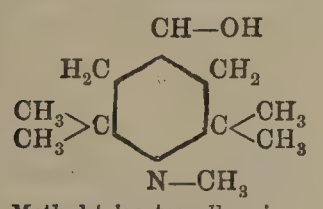
THE CONNECTION BETWEEN PHYSIOLOGICAL ACTION AND CHEMICAL STRUCTURE.

THE SYNTHETIC PRODUCTION OF EUCAINE.

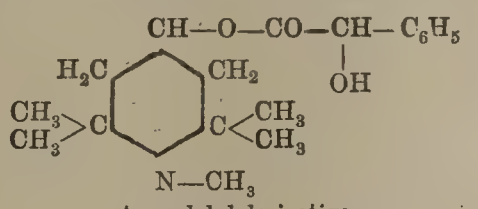
BY G. MERLING.

The probability of an intimate relation between the physiological action of a substance and the internal arrangement of its constituent atoms or molecules has of late attracted considerable attention as opening up one of the most interesting and important problems for investigation. As an illustration of the way in which chemical structure may serve as a guide in the attempt to produce artificially a substance of particular physiological action, the circumstances connected with the production of eucaine are extremely instructive. These were recently narrated in a communication* to the German Pharmaceutical Society in Berlin by G. Merling as follows:—

In 1886 Emil Fischer showed that when methyl-triaceton-alkamine reacts with mandelic acid, so that the hydrogen of its hydroxyl is replaced by the mandelic radicle, a substance is produced which has marked mydriatic properties, like atropine and homatropine.

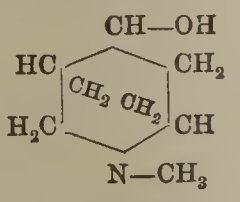


Methyl-triaceton-alkamine.

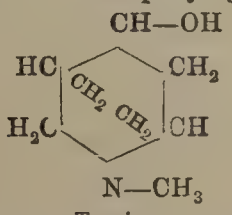


Amygdalyl derivative.

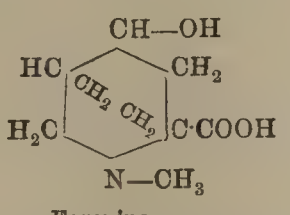
At the time this mydriatic character of the compound thus obtained was in so far remarkable that according to the view then prevailing as to the constitution of tropine, there did not appear to be any close chemical relation between methyl-triaceton-alkamine and tropine. But when subsequent investigation showed that the constitution of tropine is different from what had been supposed, the intimacy of the relation between these compounds became evident. Both are derivatives of γ oxy-methylpiperidine as represented by their formulæ. Hence it was no longer remarkable that amygdalyl-methyl-triaceton-alkamine should possess physiological characters which are analogous to those of atropine and homatropine having similar chemical constitution.



Between atropine and cocaine there is a similar close relation: ecgonine may be regarded as the carboxylic acid of tropine, as shown by the accompanying formulæ:—

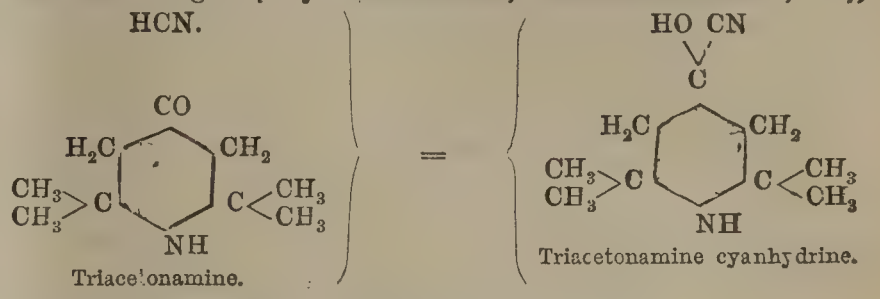


Tropine.



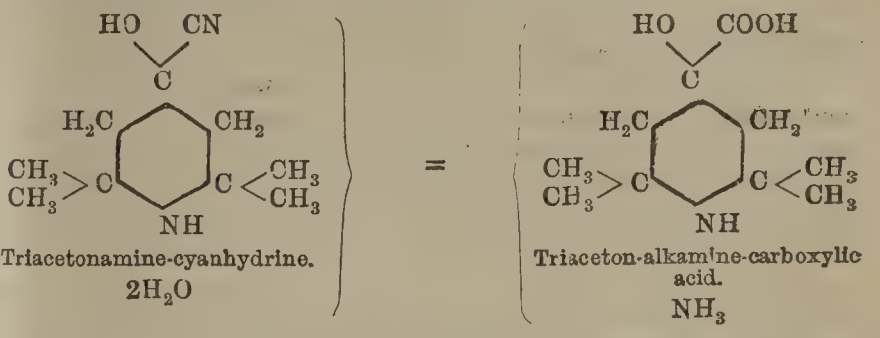
Ecgonine.

Ecgonine is therefore a derivative of a γ-oxy-piperidine carboxylic acid. It can be converted into cocaine by replacing the carboxyl hydrogen by methyl, and the hydroxyl hydrogen by benzoyl. Having regard to the analogy between amygdalyl-methyl-triaceton alkamine and atropine or homatropine, the idea suggested itself that by effecting a similar introduction of benzoyl and methyl into γ-oxy-piperidine carboxylic acid compounds obtainable by synthesis, products might be obtained which would resemble cocaine in possessing the power of producing local anæsthesia. When the investigation having that object was commenced, synthetic γ oxy-piperidine carboxylic acids were unknown, but Merling found that they could be prepared by attaching hydrocyanic acid to triacetonamine or some one of its analogues (vinyldiacetonamine, benzaldiacetonamine, etc.),



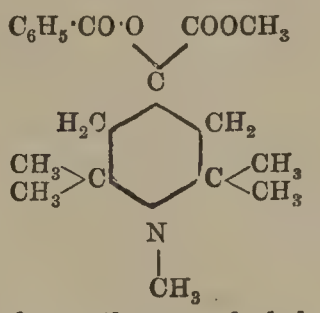
Triacetonamine. Triacetonamine cyanhydrine.

and then saponifying the cyanhydrine so produced.



Triacetonamine-cyanhydrine. $2H_2O$ Triaceton-alkamine-carboxylic acid. NH_3

The γ-oxy-piperidine carboxylic acids thus produced are analogues of ecgonine and—in the same way that ecgonine is converted into cocaine by successive esterification and benzoylating—these synthetic carboxylic acids may, by substituting alcohol radicles for their carboxyl hydrogen, and benzoyl for the hydroxyl hydrogen, be converted into basic products, which possess, in common with cocaine, the property of producing local anæsthesia. Eucaine belongs to this class of compounds. It is the methyl ester of a methyl-benzoyl-triaceton-alkamine-carboxylic acid, as shown by the following formula:—



Eucaine crystallises from ether or alcohol in brilliant prisms melting at 104° C. The hydrochloride dissolves in ten parts of water, crystallised from methylalcohol: it contains two molecules of water; when crystallised from a water solution it contains one molecule.

SEROTHERAPY IN LEPROSY.

In a lecture on serotherapeutics, delivered in the Policlínica at Bogotá, in the Republic of Colombia, by Dr. Juan de Dios Carrasquilla, on July 1, 1895, leprosy was mentioned as being an infectious disease, whose similarity to other diseases already successfully treated by serotherapy in Europe would lead one to predict good results from carefully conducted serum injections.

Early in 1895 M. Babès noticed the improvement in leprous cases after the use of serum from dogs which had been immunised against the tuberculosis by inoculation with old tubercular cultivations, but no one up to that time had attempted to make a leprous serum, principally for the reason that the leprosy bacillus or microbe, if such exists, cannot be cultivated. Under these circumstances Dr. Carrasquilla decided to follow the method of Ch. Richet in treating syphilis, and accordingly obtained some of the blood serum of a leper. He inoculated a horse with it four separate times with an

* Translated from the *Berichte der deutschen pharmaceut. Gesellsch.*, vi., 173.

interval of ten days between each injection, using about 45 C.c. of serum each time. Ten days after the last injection the horse was bled from the jugular vein, a litre of blood being removed with the usual antiseptic precautions, and the serum from this preserved by passing through a filter containing camphor. The leprous patients were treated with a number of injections of this serum of from 1 C.c. to 5 C.c. each in the thighs, a Roux syringe with needles five centimetres long being employed for the purpose.

The results of the treatment were that the diseased patches became gradually decolorised, particularly those near the point of injection, the sensibility of the parts which previous to the treatment had been without feeling, was re-established, and the general state of the sick persons was much improved. Dr. Carrasquilla brought his results under the notice of the National Academy of Medicine of Bogotá in two communications, viz., August 30, 1895, and November 22, 1895, which were published in the organ of the Academy—*La Revista Medica*—in May of the present year. By the courtesy of Dr. Pablo García Medina, the permanent Secretary of the National Academy, in forwarding a copy of the third communication read by Dr. Carrasquilla on June 24 this year, we are enabled to give this short outline of the new treatment. The pamphlet referred to contains very full directions as to the collection of the blood, both of the patients and horses, the preparation and preservation of the serum and its chief physical characters, together with extensive clinical notes of great interest from a medical point of view, but scarcely suitable for abstraction in a pharmaceutical journal.

NOTES ON THE USES OF DRUGS.

Drugs Acting on the Alimentary Canal.

(*Continued from page* 254.)

Emetics.—Drugs which induce vomiting are known as emetics. What is vomiting? The stomach, as has already been mentioned, is a muscular bag situated in the abdominal cavity; above it is the diaphragm, which consists of muscles, and is perforated to allow the gullet to pass through. During vomiting the muscles of the diaphragm above, and those of the abdomen in front, contract and press the stomach, while the stomach is itself contracting and endeavouring to express its contents. At the same time the orifice of the gullet in the stomach dilates, the head is thrown forward and the mouth opened. Naturally the food in the stomach passes up the gullet and is expelled.

Expiratory movements take place at the same time, and prevent the vomit passing into the windpipe. There is in the brain a controlling centre, comparable to a head office, called the vomiting centre, which sees that the movements occur simultaneously.

When the diaphragm and abdominal muscles contract, but the sphincter of the gullet remains closed, retching only is produced.

Emesis or vomiting can be induced by an irritant acting inside the stomach, or by some cause acting on the brain. An unpleasant sight, a foul smell, a disgusting thought, are all well known to make people sick.

Emetics act in two ways; they either act as irritants inside the stomach, when they are known as local emetics; or they get into the circulation and act on the vomiting centre in the brain, when they are called general emetics.

A familiar example of local emetics is mustard and water.

Local emetics most commonly used in medicine are zinc sulphate, of which twenty grains are given in an ounce of water, and the dose may be repeated; copper sulphate, of which the same dose is given, and carbonate of ammonium.

Copper sulphate is poisonous if it is absorbed, and if vomiting is not produced by it, the stomach pump should be immediately used and the stomach evacuated. The action of carbonate of ammonium is uncertain, but the drug is far less depressing than the two former ones.

General emetics include apomorphine, tartar emetic, and ipecacuanha, and when taken in large doses, senega, squills, digitalis.

Apomorphine hydrochlorate, of which 1/10th of a grain (equal to two minims of the official hypodermic injection) given subcutaneously is efficacious, produces vomiting in five or ten minutes; it unfortunately produces considerable depression, but it is indicated when emesis is required without irritating the stomach.

Apomorphine can be made up in tablets, and is therefore the most convenient emetic to carry about for use in cases of poisoning or other emergency.

Tartar emetic at one time was a favourite drug; one teaspoonful of the official vinum antimoniale is generally sufficient to produce vomiting; a smaller quantity, such as five to twenty minims, is given in cough mixtures, and acts as a good expectorant and diaphoretic.

Majendie tried a curious experiment with tartar emetic. He removed the stomach from a dog, and replaced it by an indiarubber bag containing fluid; he then injected some wine of antimony into the circulation, and thereby produced vomiting.

From this experiment Majendie concluded that antimony causes vomiting by acting on the vomiting centre, and not on the stomach directly. Large doses of antimonial wine cause very great depression, almost paralysing the brain and spinal cord, and weakening the heart. Prior to the introduction of chloroform, patients were given antimonial wine to keep them quiet during painful operations.

Ipecacuanha wine is another preparation which is used in small doses as an expectorant and in larger doses (one teaspoonful) as an emetic. It is useful for children suffering from diphtheria, when it is desired to induce vomiting in the hope that the child may cough up the membrane at the same time as it vomits. Ipecacuanha is extensively used for bronchitis and dysentery, and will be referred to later. Senega, squills and digitalis are never ordered in medicine as emetics, but, unfortunately, when given for other purposes they often produce nausea and vomiting.

Emetics are used to remove a soft foreign body from the gullet, such as a piece of meat impacted there near the opening of the windpipe; for this purpose apomorphine is well suited, as it can be injected subcutaneously.

They are also used to remove irritating, foul, or decomposing contents from the stomach after a heavy meal or excessive indulgence in alcohol. After a person has taken poison that does not corrode the stomach, emetics are used to get rid of it; for this purpose mustard and water are often handy, but zinc sulphate is more efficacious. Emetics are used to discharge false membranes in the larynx caused by diphtheria. Tartar emetic and ammonium carbonate are both good for this, both of them stimulate the living membrane of the bronchi at the same time as they cause vomiting; ammonium carbonate is the least depressing of the two drugs.

Purgatives are drugs that act on the intestine and cause diarrhœa; diarrhœa is checked by intestinal astringents.

In order to understand what diarrhœa is, and the principles involved in checking it, one should know something about the normal working of the intestinal tract, and the changes which food undergoes in its passage until it is passed as fæces or stools. The food leaves the stomach as a soft moist mass and is poured out into the duodenum, a short curved part of the small intestine; here it comes in contact with the bile secreted by the liver and the pancreatic juice secreted by the pancreas.

The action of these two juices is to convert all proteids into peptones, to change the starches into sugar, and to emulsify the fats, so that all the digestible kinds of food are made capable of absorption. The small intestine is continually contracting and forces its contents onwards. Passing down the fluid is absorbed, and by the time the large intestine is reached only the solids remain, and are stored in the rectum as fæces.

The rectum should be emptied once a day. The intestine along its whole length secretes a fluid which lubricates its walls, and mixes with the fæces.

The condition of constipation may be produced by dryness of the matter in the lower bowel, and by feeble muscular movements of the bowels. Diarrhœa, on the other hand, depends upon the matters in the intestine being too watery, and upon excessive intestinal secretion and movement.

Intestinal movement is called peristalsis. Purgatives act by either increasing peristalsis or by rendering fæcal matters more watery.

The fæces are made more fluid in two ways; either less fluid is absorbed on the way down the intestinal tract, or more water is poured into the intestine from the blood-vessels in its walls.

Purgatives are divided into several varieties, 1, laxatives; 2, simple; 3, cathartic or drastic; 4, hydragogue; 5, saline; 6, cholagogue; 7, intestinal tonic.

1. *Laxatives* simply cause a slight action of the bowel and produce a normal motion. Laxatives include many articles of diet such as brown bread, oil, butter, green vegetables, and some fruits, such as figs, prunes, bananas, honey, and so on.

Laxative drugs are treacle, manna, tamarind, sulphur.

2. *Simple purgatives* are somewhat stronger than laxatives, and generally given in sufficient doses to produce one or more liquid motions without causing pain or discomfort. Aloes, rhubarb, cascara sagrada, senna, and castor oil are included among them.

Aloes, or its extract aloin, is very frequently employed. It acts only slowly, generally not until twelve hours after it has been taken. Aloes is best given in a pill at dinner time, when it also assists digestion by stimulating the liver. It can be taken for long periods without losing its properties. Nearly all the pills in the British Pharmacopœia contain extract of aloes. Owing to its nauseous taste, aloes is given generally as the solid extract in pills, containing 2 to 4 grains, or in the form of aloin.

In the treatment of anæmia, aloes and iron are often combined, the former corrects the constipating effect of the latter.

Decoctum aloes co. is added to mixtures containing iron, such as mistura ferri co., for the same purpose.

Rhubarb is much used for children. The Pharmacopœia contains not only the powder and pills of rhubarb, but also a tincture and a wine, the unpleasant taste of the fluid preparations is sufficient to make them unpopular. Rhubarb is best given to children in the form of pulv. rhei co., or Gregory's powder, in doses of half to one teaspoonful.

For adults rhubarb is generally given in pill form, as the extract combined with aloes. The objection to the use of rhubarb as a purgative is that it contains an astringent principle, known as rheotannic acid, which often causes constipation to follow the purge.

Cascara sagrada has recently become very much used in the treatment of chronic constipation. It acts best for some people if given in doses of 10 to 15 minims of the fluid extract three or four times a day, for others half a drachm taken at bedtime is more efficacious.

The taste of the drug is nauseous, and is, therefore, often ordered in the form of dry extract and made up as a large pill or lozenge.

Senna is a very old and a very reliable purgative, acting rapidly, generally within three or four hours.

The "house mixture" of most hospitals given to clear out the bowels of those who have indulged rather too well than too wisely is mistura sennæ co., a most certain remedy.

Compound liquorice powder, containing as it does, sulphur, senna, liquorice and fennel, is a very safe, mild purgative, and a teaspoonful taken every night, though somewhat unpleasant, acts well in chronic constipation. The confection of senna contains senna mixed with nice fruits, such as tamarinds and figs; it can be given to children in teaspoonful doses, but it is not always certain to give a satisfactory result.

Castor oil, despite its nauseous flavour, is most valuable, on account of its safety and the certainty and mildness of its action Combined with a few drops of laudanum it is used in the treatment of lead colic, and also to clear out the irritating matters from the bowels in cases of diarrhœa due to intestinal decomposition.

Castor oil is dropped on to the conjunctiva of the eye to heal and to relieve the pain after the removal of a foreign body. Poultices of castor oil tree leaves are applied to the breast to promote the secretion of milk.

3. *Cathartic or Drastic Purgatives* increase peristalsis, and produce diarrhœa with several watery motions generally attended with pain and passage of flatas or wind. They cause considerable depression. Among this group are jalap, scammony, colocynth, gamboge, podophyllin, croton oil, and elaterium.

Jalap is generally prescribed in the form of pulv. jalapæ co.; in this preparation it is mixed with acid tartrate of potassium, and is thus a hydragogue cathartic, much used to relieve dropsies, and in the treatment of heart disease.

Jalap has a great reputation among strong country people, its action on the bowels is too severe for the ordinary individual. Scammony is similar to jalap. The mistura scammonii is made up with milk, so that it can be given to unsuspecting young children. It is also given to evacuate the bowels when tapeworms are suspected.

Colocynth is often given to increase the action of calomel. It should never be given unless mixed with henbane or other carminatives, as it causes severe griping, and is most distressing.

Gamboge has gone out of favour, it is a powerful purgative, and in many respects resembles colocynth.

Podophyllin resin is active in small doses of one-eighth to half a grain, and is therefore useful to add to purgative pills.

Podophyllin stimulates the liver, and causes profuse diarrhœa, but often irritates the rectum and lower bowel considerably. It is valuable in the treatment of a bilious attack, and can be used when calomel is contra-indicated. Podophyllin produces a soft motion about six hours after it has been taken.

Croton oil is administered in doses not exceeding one drop, generally mixed with butter. In this way it can be administered to semi-unconscious people for whom a free evacuation is desired, as in cases of cerebral hæmorrhage or uræmia. Elaterium is given with great caution; one-sixteenth of a grain produces the required effect. It is of use in the same class of cases as croton oil. Elaterium is generally more certain in its action than elaterin, its active principle, which is given in doses not exceeding one-twentieth of a grain.

4. *Hydragogue purgatives* act by increasing the flow of water into the intestine, and so causing diarrhœa.

Nearly all saline purgatives are also hydragogue.

5. *Saline purgatives* are so called because they consist of salts. They include the sulphate, tartrate, and acid tartrate of potassium the sulphate, tartrate, and phosphate of sodium, the sulphate citrate, and carbonate of magnesium.

All of these produce a watery motion, but are somewhat uncertain. The best results are obtained by taking them the first thing in the morning some time before breakfast. Of the group, the most valuable are sulphate of magnesium and acid tartrate of potassium.

Sulphate of magnesia is often given in addition to sulphate of soda; the two taken together in the morning act well in cases of chronic gastric catarrh and congestion of liver. Acid tartrate of potassium produces a very fluid motion, and is frequently ordered in cases of dropsy.

6. *Cholagogues* are so called because they stimulate a flow of bile; the mode of action is not very clear, but at any rate they make the gall bladder empty itself and stimulate the intestines to contract and quicken the removal of bile and fæces from the body.

The more important of this group are calomel, blue pill, sulphate of soda, euonymin, iridin, podophyllin, rhubarb, aloes. Calomel is a very safe purgative, and its action is almost proportional to the dose, one grain producing one motion, two grains two motions, and so on. There is no better purgative than calomel or blue pill to relieve the body of the accumulations of a feast, and the headache due to indulgence in good living.

Euonymin and iridin are not official, but are bitter vegetable bodies introduced from America.

Extracts are prepared from both of them, of which the dose is 2 to 5 grains, they are valuable stimulants to biliary secretion, and are used for chronic constipation and "congestion of the liver." The other drugs in the list have been described under other headings.

7. *Intestinal tonics* act by regulating the contraction of the muscles of the intestinal walls. They include nux vomica and strychnia, belladonna, hyoscyamus, and carminatives.

A small quantity, such as a grain of extract of nux vomica, is frequently added to pills for the cure of chronic constipation.

Extract of belladonna is often used in the same way.

Extract of henbane is added to purgative pills to prevent griping and pain; all purgative pills should contain carminatives.

Intestinal Astringents are drugs that cure diarrhœa or cause constipation. They act either by paralysing the muscles of the intestinal wall, as opium and morphia do, or by constringing the mucous membrane and preventing secretion, or by remedying the cause of diarrhœa, as by neutralising excessive acidity of intestinal contents. Diarrhœa is a symptom of many serious diseases, and every case has to be investigated by a medical man before it is treated.

Opium, as before stated, paralyses the muscular wall of the intestine, and for this purpose is given in doses of 1 to 2 grains; at the same time it abolishes all pain.

Opium is certain in its action, and no other drug will compare with it; it is equally useful if taken by the mouth or injected into the lower bowel. A subcutaneous injection of morphia is often convenient, but is not so efficacious.

Tannic and gallic acids, catechu, coto bark and hæmatoxylin are valuable astringents derived from the vegetable kingdom, while acetate of lead, sulphate of zinc, and mineral acids are derived from the mineral kingdom.

Certain drugs check special kinds of diarrhœa. Small doses of arsenic will cure the awkward evacuation of the bowels which some people suffer from, coming on immediately after taking food.

Ipecacuanha given in doses of twenty grains or more is almost a specific in dysentery. Alkalies and antiseptics, such as carbolic acid, creolin, and salol, cure diarrhœa dependent upon acid and fœtid contents of the bowel.

BOTANIC GARDENS OF THE WORLD.

II.—LONDON PUBLIC PHYSIC GARDENS, CHELSEA.

We have seen that at a very early date in the history of English botany private physic gardens were formed for the more convenient study of indigenous and foreign medicinal plants. It was not, however, till the middle of the seventeenth century that the first London public physic garden was founded at Westminster. As early as the year 1596, it is true, Gerard had suggested to the Company of Barber-Surgeons that they should institute a garden for the cultivations and study of medicinal plants, and a piece of land was actually selected for that purpose at East Smithfield, but it was found unsuitable, and the scheme fell through.

In 1633 the Company of Apothecaries of London instituted herborising expeditions for the benefit of their younger members and their apprentices. Of one of these tours undertaken by Johnson, the learned editor of Gerard, we possess an interesting record, *Mercurius Botanicus*, 1634, from which we learn that they went as far afield as Bath and Bristol, visiting on the return journey Southampton, the Isle of Wight, and Guildford. In this short tour they collected more than six hundred indigenous plants, of which many were new additions to the English flora. In 1658, following the example of Oxford, where Lord Danby had twenty-five years before founded a botanic garden, the Apothecaries' Company founded a medical garden at Westminster, which was visited by Evelyn shortly after its foundation. On June 10 of that year, he writes in his "Diary," "I went to see the medical garden at Westminster, well stored with plants under Morgan, a skilful botanist." The air in that locality not being very suitable for plants, although the surroundings of London were even then so rural that the herborisations of the company occasionally took place between the City and Islington, the company obtained from Mr. Cheyne in 1673 a lease of four acres of land in Chelsea. The next year, 1674, several private members of the company volunteered to wall-in Chelsea Gardens at their own expense on the company's giving six pounds a year to the herborisings, which were put on a new footing: five (two during May, one in June, one in July, and one in August) being arranged in the immediate vicinity of London for the apprentices, while a general herborising, for the members of the company only, was instituted in July for the collection of rare plants to be exhibited on a fixed day to the members of the company and the officers of the Royal Colleges of Physicians and Surgeons. A good crop of herbs for the use of the company's laboratory was furnished by the garden four years after its institution. A greenhouse was erected in 1680, and five years later we find Evelyn admiring the ingenuity exhibited in the conveyance of hot air through vaulted brickwork under the conservatory, "so that the doors and windows could open in the hardest frost." He also noticed specially "Jesuit's bark," as being much used for ague, and he seems to have seen indeed "innumerable rarities," in this "garden of simples," especially annuals. In 1683 four cedars were planted, but the cedar now to be seen in the garden is one of the twelve planted by Sir Hans Sloane. During its early years the Apothecaries' Company seems to have had some difficulty in keeping up this garden. In 1691, we learn from Field, the historian of this garden, that it was ordained for the keeping up of the garden, that every member should annually pay two shillings, every master on binding an apprentice five shillings, every apprentice at the time of binding five shillings, and every member dining at the private herbarium a shilling. Moreover, it was decided that every fine paid to the corporation should be guineas instead of pounds, and that a shilling in the pound of the laboratory dividend should be devoted to this object. The total of these charges, it was estimated, would amount to ninety pounds a year.

In Evelyn's time, Watts was keeper of the garden, having been appointed to that office in 1680. He secured several Dutch rarities for the garden, through Dr. Herman, the Professor of Botany at Leyden who visited the garden, but in 1691 we find Dr. Hamilton complaining to the Society of Antiquarians that many things in the garden were not in as good order as they might reasonably be expected to be, and that Mr. Watts was about to be removed for his neglect. About this time Samuel Doody, the earliest investigator of the Cryptogamia in England, was demonstrator at Chelsea Physic Garden. An apothecary of London and Fellow of the Royal Society, he enjoyed the friendship of Ray, Plukenet, and Sloane, and contributed many new plants to Ray's 'Synopsis.' He died in 1706.

Petiver, who was apothecary to the Charterhouse, seems to have succeeded Doody as demonstrator at Chelsea Gardens. A correspondent of Ray, whom he assisted in the preparation of the second volume of his *History of Plants*, he engaged the captains and surgeons of ships to bring him home the seeds of foreign plants. Under the title of *Botanicum Hortense*, he contributed eight tracts to the *Transactions of the Royal Society*, giving an account of various rare plants growing in gardens round London, especially in the garden of the Apothecaries' Company at Chelsea. From the notes attached to these tracts it appears that Riqueur, the Queen of Spain's Apothecary, sent him the seed of several rarities which he caused to be cultivated at Chelsea, where they flowered and did well. Another Spanish botanist, Dr. John Salvadore, at Barcelona, sent him very fair specimens of *Stæbe Pinea amplo capite*, which flowered at Chelsea as well as in its native habitat of Narbone and Montpelier. The garden at Chelsea was also enriched by gifts from Jacob Bobart "Botanic Professor at Oxford."

While still a youth, Hans Sloane, with whose name the Apothecaries' Garden at Chelsea is inseparably associated, took up his abode in a house adjoining the laboratory of the Society, in order to reap the benefit of their garden, and soon became acquainted with Boyle and Ray. His voyage to Jamaica in 1687, when he was in his twenty-ninth year, resulted in the enrichment of Chelsea Garden, for his collection of plants which formed the bases of his *History of Jamaica Plants* excited the admiration of Sir Arthur Rawdon, and led him to send James Herbert to the island to bring home plants. He brought back with him nearly a cargo of live and dry plants, many of which found their way to Chelsea and to the Bishop of London's garden at Fulham.

When, in 1714, Sloane was consulted by Queen Anne, and was appointed Physician-General to the Army, the Company of Apothecaries instructed its Garden Committee to negotiate with him for the purchase of the ground they had on lease, he having two years before purchased the manor of Chelsea. In 1721 he gave the freehold of their premises, about four acres in extent, to the Company, on condition that they should pay a quit rent of five pounds per annum for ever, use the grounds *in perpetuum* as a physic garden, and annually deliver to the Royal Society, through the Demonstrator of the Garden, fifty new plants until the number should amount to two thousand, all the plants to be specifically different and grown in the garden. In 1774, two thousand and five hundred and fifty specimens had been contributed and duly acknowledged every year in the *Transactions of the Royal Society*. They continued, however, to be sent at intervals till 1791. This condition was probably suggested to Sloane by the fact of Watts having sent specimens of curious exotics to the Royal Society as far back as the year 1682, when Sloane was still a student at the Garden.

The object of this gift to the Company is stated in the conveyance to be "That the said garden may at all times hereafter be continued as a physic garden, and for the better encouraging and enabling the said Society to support the charge thereof, for the manifestation of the power, wisdom, and glory of God in the works of the Creator, and that their apprentices and others may better distinguish good and useful plants from those that bear resemblance to them and yet are hurtful." Sloane also contributed towards the expense of building hothouses, and of constructing stairs at the watergate, for the gardens at that time sloped down to the river. To show their appreciation of his gifts, the Society placed a statue of Sloane, by Rysbrach, to his memory in front of the greenhouse. It was removed to its present position in 1737, and bears the inscription "Hansio Sloane, Baronetto Archiatro, Insignissimo Botanices Fautori, Hoc honoris causa Monimentum, Iisque perpetuam ejus Memoriam, Sacrum voluit Societas Pharmacopœiorum Londinensis, 1733." The rapid rise of Sloane to influence—he became President of the Royal College of Physicians, President of the Royal Society, and physician to George II.—caused him to be satirised by the wits, nor did the gardens with which he identified himself escape their shafts. Dr. King, in his 'Journey to London,' says: "I was at Chelsea, where I took particular notice of these plants in the greenhouse at that time—*Ortica maleolens japonica*, the stinking nettle of Japan; *Goosberia sterilis Armeniæ*, the Armenian gooseberry that bears no fruit (this had been potted thirty years); *Cordis quies Persiæ*, which the English call heart's-ease, or love-in-idleness, a very curious plant; *Brambelia fructificans Laplandiæ*, the blooming bramble of Lapland; with a hundred other curious plants—as a particular collection of briars and thorns, which were some part of the curse of Creation."

At the time of Sloane's benefaction to the Society, Isaac Rand, an apothecary and Fellow of the Royal Society, was demonstrator of Chelsea Garden, holding that office, 1722-1732. He enjoyed considerable reputation among his contemporaries, and published two catalogues relating to the garden, the *Index Plantarum Officinalium Horti Chelseiani*, 1730, in which are included 518 officinal plants together with the specification of the part in each used in medicine, and the *Horti Chelseiani Index Compendiarius*, of 1739.

Rand was succeeded at Chelsea by Joseph Miller, who had served the office of Master of the Apothecaries' Company in 1738. In 1722 he had published one of the latest of the herbals, *Botanicum Officinale; giving an account of all such plants as are now used in the practice of physic, with their description and virtues.* This is an alphabetically arranged list of plants according to their officinal names, together with the summary of their virtues, taken from Dale's *Pharmacologia.* There is also preserved in the Library of Apothecaries' Hall a manuscript work of Miller, called *Icones Plantarum*, which consists of coloured figures of plants with the names written by hand. Unfortunately this work bears no date, but as the influence of Linnæus is clearly perceptible in the arrangement, the Compositæ being grouped together and other large groups of plants — the Umbelliferæ, Leguminosæ, Labiatæ, Rosaceæ, Ranunculaceæ, Liliaceæ, Felices, etc.—being clearly distinguished, and Linnæus is known to have visited Chelsea Garden in 1736, it was probably written either shortly before Miller went to the Garden or some time during his tenure of office.

Of John Wilmer, M.D., demonstator of Chelsea Garden, 1746-1764, there is little known. He seems to have been quite eclipsed in reputation by the gardener, Philip Miller. During his tenure of office specimens of the tea plant, then a comparative novelty in England, were grown in this garden, and mignonette was received from Dr. Adrian van Rozen, of Leyden, and from Chelsea introduced into the gardens of the London florists.

John Martyn, afterwards Professor of Botany at Cambridge, 1733-1765, married the youngest daughter of Dr. King, the Rector of Chelsea, and attracted by the fact that Wilmer, whom he knew

intimately, was demonstrating there, took up his residence at Chelsea and died there in 1769.

William Hudson, F.R.S., demonstrator, 1764–1769, was an enthusiastic investigator of the British flora. He published in 1762 his *Flora Anglica*, which, not counting the very badly executed *Flora Britannica* of Dr. Hill, may fairly be considered the first English flora following the Linnean arrangement. His residence in the British Museum, his acquaintance with Linnæus, and his access to the herbaria of nearly all the assistants of Dillenius and Ray, led to his correcting the errors of many of his predecessors, but, as he states in the preface, the Cryptogamia were still very little investigated in England, and caused him a great deal of trouble. The plants in this flora, arranged in the Linnean classes and orders, are clearly described, and those of their number that are medicinal have attached to them references to the Pharmacopœia.

Stanesby Allchorne was demonstrator of the garden, 1769–1772, and was succeeded by William Curtis, whose botanical magazine did a great deal for the popularisation of botany in England. His London flora, published in 1777, was entitled *Flora Londinensis, or Plates and Descriptions of such Plants as grow wild in the Environs of London.* It records their places of growth, their times of flowering, Linnean and otherwise, and a careful description of each plant in Latin and English is added, together with notices of their use in agriculture, medicine, and the arts.

(*To be continued.*)

DENTIFRICES.

BY MISS OLIE M. CONKLIN.*

In order to make a good dentifrice, something must be known in regard to the structure of the teeth and the causes of decay.

The teeth are composed mainly of calcium phosphate, together with small quantities of other mineral matters. The bony part of the tooth is called dentine. This encloses a cavity which is supplied with nerves and blood vessels. The crown of the tooth is covered with a harder substance, called enamel. When the enamel becomes injured from any cause, decay may result. Decay is also established and promoted by the particles of food which become lodged in the spaces between the teeth. The ferment contained in the saliva acts on these particles of food, producing a lactic acid fermentation which causes the teeth to decay.

In a good dentifrice it is necessary to have an antiseptic to check this fermentation and to kill all bacilli. Still another injury to the teeth is tartar.

Tartar is an earthy substance held in solution by the saliva, and is deposited upon the teeth as the saliva undergoes decomposition.† By analysis Berzelius has found tartar to consist mainly of phosphate of lime in connection with cartilage and animal fat. No two samples of tartar will be found to contain the same amounts of the constituents, as the relative proportions vary in different individuals.

The only way to remove tartar from the teeth is by mechanical means, and if the teeth are covered with a copious deposit, it must be removed by a process called scaling, which should be done only by a competent dentist.

The teeth can be kept free from tartar by means of a brush, aided by some polishing agent, which should not be hard enough to do any injury to the enamel. Hence another requisite in a dentifrice is a good polishing agent.

Nitric acid will remove tartar readily, but will destroy the enamel. A tooth placed in concentrated nitric acid was completely dissolved in forty-eight hours.

The most essential things in a tooth powder for general use are a good polishing agent and an antiseptic.

Soap is used as a cleansing agent, but it is difficult to state just how it acts in the mouth. Flavouring, sweetening, and colouring may be added to make the powder more agreeable. Sugar should be used sparingly, for if any be left in the mouth it is liable to cause decay of the teeth by setting up fermentation. Saccharin may be used with perfect safety, giving the required sweetness and doing no harm, as it is not fermentable. I have found 1 part of purified saccharin in 2000 to be sufficient, too much causing a disagreeable, nauseous taste.

Astringents are useful in cases of spongy gums, but are objectionable for ordinary use, because they cause the gums to shrink, leaving the crown in an exposed condition.* Of the bases an impalpable precipitated chalk is one of the best. It has a good polishing effect, but should be well sifted and should contain no grit. It is hard enough to remove tartar by attrition, without injury to the enamel. A crystalline chalk should not be used, because the sharp edge of the crystals might injure a soft enamel.

Prepared chalk is not as good as precipitated. It is too sticky, and adheres closely to the teeth, giving trouble. Many other bases have been used, among them being cuttlefish bone.

Cuttlefish is gritty; it has a salty taste, and is not a good polishing agent. If used at all, only the soft inside portion should be employed.

Egg-shells have been used, but they offer no advantages and are liable to contain grit.

Charcoal is sometimes recommended, but, while being a good deodoriser, it is liable to get in between the teeth and under the gums, causing discoloration.

Orris root and starches are not advisable, because they are easily fermented, and if allowed to remain in the mouth would set up fermentation, just as food would.

Pumice stone is too gritty and hard, and should be used only in special cases, and then only occasionally, as its continued use wears away the enamel.

Strontium and magnesium carbonate might be used.

Calcium phosphate is sometimes recommended.

As precipitated chalk is one of the best polishing agents, it is well to examine some of the samples on the market. Their quality was compared by elutriation and by specific gravity.

The microscope is a valuable aid in determining whether the chalk is crystalline or not. Six samples were mounted dry.

Specific gravity was taken in two ways. 1st method: 1 gm. of the chalk was placed in 50 C.c. flask; then water added up to the mark; then take the weight of the whole, the difference in weight between result and 1 giving the amount of water added. 50 gm. the weight of pure water up to the mark, minus the weight of powder and water, gives the amount of water displaced by chalk, or the loss of weight of the chalk when under water. Specific gravity is found by dividing the weight in air by loss of weight in water.

2nd method was by placing chalk in 50 C.c. specific gravity flask up to the mark, and then weighing. Good results may be obtained from this method if care is taken in shaking the powder down.

	1st method.	2nd method weight 50 C.c.
No. 1	2·27	40· gm.
No. 2	2 66	30· ,,
No 3	2 43	29 7 ,,
No. 4	3·22	27·42 ,,
No. 5	3 44	— ,,
No. 6	2 77	46· ,, (crystalline.)

Elutriation:—

No. 1 settled more slowly than the others, some particles remained

* Thesis presented to the Faculty of the Massachusetts College of Pharmacy, April, 1896. From the *New England Druggist.*

† 'Disease of the Human Teeth,' Fox and Harris.

* 'Disease of the Human Teeth,' Fox and Harris.

suspended for three hours, showing a very fine powder, and also very uniform.

No. 2 is the next in fineness and uniformity, but it does not remain suspended as long as No. 1.

Nos. 3 and 4 are about alike in regard to uniformity. No. 3 being a very little finer.

No. 5 is much coarser than the others, containing but a very little fine powder.

No. 6 is very uniform but very heavy. It settles very quickly; this is probably due to the crystalline structure.

These comparisons were made by taking 1 gramme of the chalk and mixing well with water in a mortar. The milky mixture is poured into a Nessler tube, water added up to the mark, and the whole is then well shaken.

The second method of taking the gravity corresponds to the test by elutriation, but the first method does not.

All the samples are up to the U.S.P. standard, except that all (aside from No. 1) contain an excess of chlorides. This, however, is not harmful in a dentrifice.

No. 1 gives only a very slight precipitate with barium chloride, showing only a mere trace of sulphates.

No. 5 does not dissolve with quite as much effervescence when acetic acid is added as the other samples, and it is not entirely dissolved. It probably contains a larger amount of sulphates.

The next thing to be considered is the antiseptic. The antiseptic in a dentrifice should be powerful enough to check all fermentation and to kill all bacilli. It should be non-volatile, so that the powder may keep its antiseptic properties when exposed.

Carbolic acid is sometimes used, but the odour is disliked by many, and it has a somewhat caustic effect on the mouth. The better the quality of the acid the less odour and taste it has.

A tooth placed in carbolic acid for twelve hours was not found injured in any way.

Permanganate of potassium is used as a mouth wash where there are carious teeth. It was found to cause discoloration where there was an imperfection in the enamel.

In a powder the permanganate may be very finely diffused, but it is quite soluble, and when water is added it will be separated from the chalk by solution, and is liable to dissolve the teeth by getting into crevices where the brush may not reach, although the brush would lessen the danger.

Thymol may be used where a cooling taste is liked. This can be advantageously used in the proportions of 1-1000.

Boric acid was found to have no effect on the enamel of a tooth placed in it for several weeks. It acts as a detergent, and is soothing and disinfecting. Its taste is somewhat bitter, but this disadvantage can be easily covered by the flavouring, etc. For use in a powder it must be in an impalpable powder.

Eugenol, eucalyptol, formic aldehyde, etc., were found to be too pungent and too volatile. Beta-naphthol has very powerful bactericidal properties, 1 part in 1000 being sufficient to preserve anatomical specimens. Its odour is slight and pleasant; taste is pungent in large quantities, but in small amounts with chalk it leaves a very pleasant, clean sensation in the mouth. It is soluble in 1-1000 of water, and is permanent.

A mixture of beta-naphthol and boric acid is said to be more powerful as an antiseptic than either taken alone.

Hydrogen peroxide leaves a very pleasant sensation in the mouth, and is useful to whiten the teeth, but it is not a practical thing to put in a tooth powder because it is so readily decomposed.

Benzoin and tolu are also antiseptics, but are too gummy and will adhere to the teeth.

The soap most readily obtained on the market is castile.

Coco-nut oil soap would be good, but it is not readily obtained in a powdered condition. That on the market contains so much starch and other organic matter that sufficient heat cannot be applied to powder it without discoloration. The flavouring depends largely on individual taste.

The following formula is a good one for general use. It has all the requisites of a good dentifrice, and leaves a pleasant cooling sensation in the mouth:—

No. 1.	Menthol	·100
	Beta-naphthol	·050
	Saccharin	·025
	Calcium Carbonate (precip.)	50·
	Soap	·500
	Oil of Rose, *q.s.*	

A nice formula for a violet tooth powder for continued use is the following:—

No. 2.	Beta-naphthol	·050
	Saccharin	·025
	Soap	1·
	Calcium carbonate (precip.)	50·

Flavour with ionone and oil of cananga, 1-2 gtts. of a mixture of 15 parts of ionone and one of cananga giving a true violet odour and a pleasant orris-like taste.

Menthol was tried with this formula. It makes a more pleasantly tasting powder, but the delicate odour is injured. Cheaper flavours may be used in both formulæ or in place of the rose or in place of the violet.

Spearmint, cassia and gaultheria give a pleasant combination. Oil of gaultheria 2 parts, and oil of cassia one part is also good. Oils of gaultheria, cassia, and sassafras make an agreeable combination.

Various other combinations of the volatile oils were tried, among them being peppermint, cassia, and anise. This was not satisfactory; there being no blending of flavours.

For spongy gums a myrrh dentifrice is useful. Have found common salt to be one of the best things to disguise the taste of myrrh. It not only covers the taste, but aids the myrrh in action, being slightly astringent and tonic.

No. 3.	Myrrh	1·00
	Sodium chloride	1·00
	Soap	·50
	Chalk precipitated	50·00
	Oil of Rose *q. s.* to flavour.	

Sweetening in this formula was found to destroy all blending flavours, making a very disagreeable powder.

Camphor is said to injure the enamel, but a tooth placed in powdered camphor for a week was not found to be injured in any way. One per cent. of camphor may be added to a tooth powder for use in case of spongy gums. The following gives a satisfactory formula:—

No. 4.	Camphor	·500
	Soap	1·
	Saccharin	·025
	Thymol	·050
	Chalk	50·
	Oil of Sassafras, 1-2 gtts.	

Dissolve the camphor in a little warm alcohol and pour on to the chalk, triturating until the alcohol is all dissolved. The thymol should be diffused in the same way. Menthol should also be diffused in this way.

All the powders should be well sifted through a very fine sieve. This removes all the coarser particles and aids in mixing the ingredients.

No. 5.	Camphor	·500
	Soap	1·
	Saccharin	025
	Calcium Carbonate	
	Oil of Sassafras, 2 gtts.	

No. 6. Same as No. 1, flavoured with oil of cassia, 1 gtt., and oil of gaultheria, 2 gtts.

PHARMACEUTICAL SOCIETY.

DONATIONS TO THE LIBRARY AND MUSEUM.

At a meeting of the Library, Museum, School and House Committee, held on Wednesday, the 14th inst., the Librarian presented the following report of donations :—

To the Library (London).

Dr. H. A. D. Jowett, London :
On Atisine, 1896.

Royal Society of Edinburgh :
Proceedings, vol. 20, 1892–95.

University of Glasgow :
Calendar, 1896.

University of Edinburgh :
Calendar, 1896.

University of Durham College of Medicine, Newcastle-on-Tyne :
Calendar, 1896.

University College, Dundee :
Calendar, 1896.

University College, Bristol :
Calendar, 1896.

Owens College, Manchester :
Calendar, 1896.

Yorkshire College, Leeds :
Calendar, 1896.

Society of Apothecaries of London :
Calendar, 1896.

Institution of Civil Engineers, London :
Charter, by-laws, and list of members, 1896.

Pharmaceutical Association of the Province of Quebec :
26th Annual report, 1896.
29th Annual announcement of the Montreal College of Pharmacy, 18

Mr. Francis Sutton, Norwich :
Systematic Handbook of Volumetric Analysis, 7th ed., 189

Mr. Robert White, East Finchley :
Struggles and Incidents in the Life of a Chemist.

Direkteur van 'sLands Plantentuin te Buitenzorg :
Mededeelingen, Nos. 16-17.

Deutscher Apotheker-Verein :
Festschrift zur 25. Haupt-Versammlung 1896

Professor E. Schaer, Strassburg :
Ueber ein merkwürdiges Verhalten des Chloralhydrates zu Stärkemehl und Jod.
Ueber pflanzliche Oxydationsfermente, insbesondere in *Phytolacca decandra*.
Ueber die Einwirkung des Morphins, sowie des Acetanilids auf Mischungen von Ferrisalz und Kaliumferricyanid.

Dr. Alfonso Herrera, Mexico :
Nueva Farmacopea Mexicana, 3a. ed., 1896.

To the Library (Edinburgh).

American Pharmaceutical Association :
National Formulary, revised edition.

Mr. Alexander Noble, Edinburgh :
Year-Book of Pharmacy, 1892, and General Index, 1864–85.

Mr. Duncan McGlashan, Edinburgh :
Pharmaceutical Journal, July, 1895, to June, 1896

Ontario College of Pharmacy :
Annual Announcement, 17th session, 1896–97

School of Medicine, Edinburgh :
Calendar, 1896.

The following report of donations was presented by the Curator :—

To the Museum.

Dr. J. B. Ormerod, Church Stretton :
Nineteen specimens of native remedies from West Africa

Dr. G. Schweinfurth, Professor of Botany, Cairo :
Balsam from *Camniphora opobalsamum*.

Mr. H. P. Hearder, Plymouth :
Large crystal of Felspar from Dartmoor.

Baron F. von Mueller, Government Botanist, Melbourne :
Resin of *Xanthorrhœa preissii*.

Mr. F. Sillitoe, Welshpool :
Fruit of *Prunus laurocerasus*.

Mr. J. H. Hart, F.L.S., Curator, Botanic Gardens, Trinidad :
Fruit of *Sacoglottis amazonica*.

Messrs. W. J. Bragg and Co., Liverpool :
Specimens of Velame root, *Casca de quina preta*, Milhomens, Umburana root, and leaves of Pitahyba.

To the Herbarium.

Messrs. Richardson and Co., Leicester :
A copy of a special edition of the Hanbury Catalogue.

The Director, Royal Gardens, Kew :
Plate 2477 and 2486 of the Icones Plantarum, representing *Amonium cereum* and *A. longiscapum*, Hook. f.

Dr. H. W. Rusby, Professor of Materia Medica, College of Pharmacy, New York :
Four specimens of *Psychotria*, from Venezuela.

Mr. J. H. Hart, F.L.S., Curator Botanic Gardens, Trinidad :
Specimens of *Sacoglottis amazonica*.

The Curator :
Specimens of *Grindelia squarrosa* and *Mentha arvensis*, var. *piperascens*, cultivated in Kent.
Claviceps purpurea growing on *Secale cereale*, *Elymus arenarius*, and *Ammophila arundinacea*.

"FIRST" EXAMINATION QUESTIONS.

October 13, 1896.

ARITHMETIC.

Time allowed—from 12.30 *p.m. to* 2 *p.m.*

[The working of these questions, as well as the answers, must be written out in full.]

1. Find the cost of 3 cwt. 3 qr. 17 lb. at £2 15*s.* 6*d.* per cwt.

2. In making gold thread a rod of silver weighing 600 oz. is covered with gold weighing 10 oz., and the rod is then drawn out into thread so fine that 70 yards weigh 72 grs. Give in yards the length of the thread.

3. A field is divided into 17 equal allotments, and the space occupied by 5 of them is 7 roods 20 perches. What is the area of the field?

4. Find the quotient, to the third decimal place, of 2·098 divided by 63·572.

5. By selling 26 lb. at 3*s.* 4½*d.* per lb., a man gains 6*s.* 6*d.* What was the prime cost per lb., and what is the gain per cent.?

6. A. would have made a profit of 35 per cent. on goods supplied to B. had he been paid in full; but B. became bankrupt and paid only 11*s.* 3*d.* in the pound. How much per cent. did A. lose?

The following question must be attempted by every candidate :—

7. Give, approximately, in yards, the difference between 10 miles and 16 kilometres.

ENGLISH.

Time allowed—from 3 *p.m. to* 4.30 *p.m.*

1. Construct a complex sentence, with two subordinate clauses of different kinds, and point out the relation of each to the principal clause.

2. Parse fully :—

"There is no doubt that he will bitterly regret it."

3. Correct the following sentences, giving your reasons :—

(i.) I saw many dead soldiers riding across the field after the battle.

(ii.) It depends whether his brother wish it.

(iii.) There lay a brook too wide to jump.

4. In the following passage supply the necessary capital letters, and put in the stops and inverted commas where necessary :—queen elizabeth attended by several of her courtiers visited coventry as she approached the town the mayor at the head of a numerous cavalcade came out to meet her on the road to the town they had to cross a wide brook and the mayors horse being thirsty

attempted several times to drink but his master always prevented him pray mr mayor said the queen allow your horse to drink the mayor replied madam it would be the height of presumption on the part of my unworthy horse to drink before your majesty's royal steed has quenched his thirst.

The following question must be attempted by every candidate :—

5. Write a short description of a summer holiday you have enjoyed, *or* give the outline of one of Shakespeare's plays, *or* of one of Scott's poems.

LATIN.

Time allowed—from 11 *a.m. to* 12.30 *p.m.*

I. For all Candidates. Translate into Latin :—

1. His brother gave this book to me.
2. The city was saved by Brutus.
3. I sent him to see what had happened.
4. Are you a slave or a free man ?
5. The Romans, who excelled the Carthaginians in strength, easily conquered them.

II. Translate into English either A (Caesar) or B (Virgil).

(Candidates must not attempt both authors.)

A.—Caesar.

1. Caesar, hac oratione Lisci, Dumnorigem, Divitiaci fratrem, designari sentiebat : sed, quod pluribus praesentibus eas res jactari nolebat, celeriter concilium dimittit ; Liscum retinet : quaerit ex solo ea, quae in conventu dixerat. Dicit liberius atque audacius. Eadem secreto ab aliis quaerit reperit esse vera. Ipsum esse Dumnorigem, summa audacia, magna apud plebem propter liberalitatem gratia, cupidum rerum novarum ; complures annos portoria reliquaque omnia Aeduorum vectigalia parvo pretio redempta habere ; propterea quod illo licente contra liceri audeat nemo.

2. Eorum satisfactione accepta, et itinere exquisito per Divitiacum, quod ex aliis ei maximam fidem habebat, ut milium amplius quinquaginta circuitu locis apertis exercitum duceret, de quarta vigilia, ut dixerat, profectus est. Septimo die, quum iter non intermitteret, ab exploratoribus certior factus est, Ariovisti copias a nostris milibus passuum quatuor et viginti abesse.

Grammatical Questions.

(For those only who take Caesar.)

1. Parse fully the following sentence :—*Quaerit ex solo ea, quae in conventu dixerat.* (Passage 1.)

2. Decline *respublica* in the singular, and *eas res* in the plural.

3. Give the rules of gender for the third declension.

4. What is the difference between *oratio recta* and *oratio obliqua?* Give *two* sentences in illustration.

B.—Virgil.

1. " Sis felix, nostrumque leves, quaecumque, laborem :
Et, quo sub coelo tandem, quibus orbis in oris
Jactemur, doceas. Ignari hominumque locorumque
Erramus, vento huc vastis et fluctibus acti.
Multa tibi ante aras nostra cadet hostia dextra."

2. Constitit ; et, lacrimans, " Quis jam locus," inquit " Achate,
Quae regio in terris nostri non plena laboris ?
En Priamus. Sunt hic etiam sua praemia laudi ;
Sunt lacrimae rerum et mentem mortalia tangunt.
Solve metus ; feret haec aliquam tibi fama salutem."
Sic ait, atque animum pictura pascit inani,
Multa gemens, largoque umectat flumine vultum.
Namque videbat, uti bellantes Pergama circum
Hac fugerent Grai, premeret Trojana juventus ;
Hac Phryges, instaret curru cristatus Achilles.

Grammatical Questions.

(For those only who take Virgil.)

1. Parse fully the following sentence :—*Feret haec aliquam tibi fama salutem.* (Passage 2.)

2. Decline *respublica* in the singular, and *eas res* in the plural.

3. Give the rules of gender for the third declension.

4. What is the difference between *oratio recta* and *oratio obliqua?* Give *two* sentences in illustration.

CINCHONA CULTIVATION IN BENGAL.

The Thirty-fourth Annual Report of the Cinchona Plantations of the Government of India in British Sikkim and Bhutan has lately been submitted to the Bengal Government by Dr. George King, C.I.E., F.R.S., Superintendent of the Royal Botanic Garden, Calcutta, and of Cinchona Cultivation in Bengal, and Government Quinologist.

The number of trees uprooted for their bark during the year 1895-96 was 453,000, comprising 65,000 of *C. succirubra*, used for the manufacture of "Government Cinchona Febrifuge," and 388,000 of the kinds which yield yellow or quinine-producing bark, chiefly hybrid cinchona and *Calisaya ledgeriana*, a large proportion of the trees uprooted being small. The number of plants was increased during the year by 9200 hybrids ; the total census of living cinchona plants at the close of the year, including nursery stock, was 3,807,701.

The crop collected during the year amounted to 467,190 lbs. of dry bark, consisting of 53,380 lbs. of red and 413,810 lbs. of yellow bark. The whole of this crop, with the exception of 790¼ lbs. supplied to the Government Medical Stores Department or sold to Government institutions, was made over to the cinchona factory for manufacture into quinine and febrifuge. In addition to the bark cropped at the Government plantations, 170,000 lbs. of quinine-yielding bark was purchased from private cultivators in the district. Seventy-four thousand lbs. of red bark worked up in the factory during the year yielded 3124 lbs. of cinchona febrifuge, valued at Rs. 10 (about 12*s.*) per lb., and from 387,200 lbs. of yellow bark, 9004 lbs. of quinine sulphate, valued at Rs. 14 (about 16*s.*) per lb., were manufactured. An additional 1500 lbs. of quinine was purchased from the quinine factory of the Madras Government at Ootacamund, in order to meet the greatly increased demand for the 5 grain packets, which are issued to the people at all post-offices throughout the province at the rate of one pice each (less than a farthing).

The total issue of quinine for the year amounted to 10,287 lbs., an increase of 2725 lbs. on the previous year, 1145 lbs. of this increase being due to the growth of the post-office demand for pice-packets and 937 lbs. issued on account of the Chitral Expedition. Of cinchona febrifuge there were issued during the year 3830 lbs., 554 lbs. more than in the previous year, the amount purchased by the public having increased by 194 lbs., showing that the preparation is held in high estimation by the public as a cheap and reliable remedy for fever, notwithstanding that cinchonidine and cinchorine can be purchased at a cheaper rate in the Calcutta bazaar. The febrifuge is an unbleached quinetum, and represents the total alkaloids in the bark.

The net profit on the year's operations amounted to Rs. 4598, a sum which, Dr. King says, would form but a small dividend on the capital which has been sunk in these plantations since they were first begun. There has not been for many years, however, any capital to pay interest upon, as the cost of the plantations was extinguished long ago by profits made during the early years of the manufacture of cinchona febrifuge. As the Government of India desires only to secure for the people, without loss to itself, a cheap remedy for fever, the Lieutenant-Governor of Bengal considers this result entirely satisfactory. The demand for quinine in the popular 5-grain powders has increased with such rapidity that it has been found necessary to limit the sale to post-offices in Bengal and Assam, and to discontinue the regular supply to other provinces.

The acknowledgments of Government are again accorded to Dr. King, and to Mr. G. Gammie, the Deputy Superintendent, for their efficient management of the Department during the year.

POPULAR SCIENCE NOTES.

The Nature of Sponges is illustrated by a series of specimens, diagrams, and labels recently added to the exhibited collections of the British Museum (Natural History). The object of the series, according to *Natural Science*, is to set forth the simpler features of sponge structure, such as the fact that sponges are animals in which currents of water enter and leave the body, after traversing a more or less complicated system of canals, and that this body is supported by a skeleton. A definition of sponges is followed by a description of a sponge consisting of a simple thin-walled sac, then a short account of the canal systems is given, and finally there is a series explanatory of the classification, which is based on the nature of the skeleton, the various divisions being illustrated by typical specimens and diagrams.

An Abnormal Hawkbit, described by a correspondent of *Science Gossip*, was about twenty-eight inches above the ground, and consisted of a somewhat fan-shaped fasciated mass, varying in thickness from about a quarter of an inch at the top to half an inch or more at the root. The "fan" was clothed with a number of leaves, smaller and differing in shape towards the top, and some hundreds of flower-buds grew directly from the "fan," without stalks in most cases. A separate flat stem, about a quarter of an inch thick and an inch and a quarter wide, branched off from the root. This had curved over upon itself in a spiral of two complete turns, and bore several flower-buds with the usual stalks.

Changes in Names of plants and animals without sufficient reason is protested against by another writer in the same paper, who expresses the opinion that well-known and generally accepted names should be continued until some recognised society or committee of European celebrity decides that the time has come for the publication of a new standard list of nomenclature of the subject. "No such list should be issued unless it is synonymic with the alteration to be accepted, if any, in distinct type at the top of the list of synonyms." What is complained of is the absence of finality in the use of names by irresponsible writers, who may possibly be mistaken in their opinions on nomenclature.

Wasps are Benefactors to cows and perhaps in a similar way to human beings, for they have been observed by R. M. Barrington, of Bray, to pounce on flies that tried to settle on his cows, bite off their wings, legs, and heads, and carry them off towards their nests, in all probability to serve as food for the larvæ (*Irish Naturalist*). It was observed that between three and four hundred flies were thus caught on two cows lying together, in about twenty minutes. And yet people will like wasps none the more.

Gold and Silver in Sea-water may not be plentiful enough to warrant the formation of limited companies to extract them, but yet those metals exist in the ocean in appreciable amounts. Professor A. Liversidge, in a long paper read before the Royal Society of New South Wales (*vide Chemical News*, Sept. 18 *et seq.*), gives the results of some experiments made with the object of determining the amount of precious metal in the sea-water off the coast of New South Wales. The evidence obtained indicated the presence of gold in the proportion of about 0·5 to 1 grain per ton, or in round numbers from 130 to 260 tons of gold per cubic mile. Assuming that the cubic contents of the whole of the ocean equal 400,000,000 cubic miles, the above proportion would be equivalent to a total amount of 100,000,000,000 tons of gold. With regard to silver, Malaguti obtained 0·0005 Gm. from 50 litres of sea-water, representing more than 40 tons per cubic mile. The metal sheathings of vessels have been proved to remove both gold and silver from sea-water, that from one old trader yielding silver, 4 ozs. 15 dwts. 9·2 grs., and gold, 1 dwt. 2·4 grs. per ton, together with a good deal of iodine. Muntz metal sheathings from the piles of wharfs have also yielded considerable proportions of both gold and silver.

A Cheap Chemical Balance is a want of the times, says H. G. Wells in the *Saturday Review*, where he points out that it is now generally recognised as a matter of urgent public importance that a considerable number of people should be practically and efficiently taught chemistry. But though there are classes in chemistry enough in this country, for the most part they engage in learning to gabble text-books or watching their lecturer's experiments from the remote recesses of a class-room. "Laboratory work in nine cases out of ten means a kind of work fudged by teachers to fill up time, and called qualitative analysis. All authoritative writers upon the teaching of chemistry agree that chemistry cannot be properly taught unless each student can work extensively at a balance." Since no teaching can be cheap that is not worked in classes, it is eminently desirable therefore that there should be at least one balance to each two students. But at present there is no efficient balance sold at such a price as will admit of chemistry being taught in the prescribed and efficient way in middle-class or continuation schools. What is required is a balance at about twelve or fifteen shillings—a practicable weighing machine, possibly on the lines of the counterpoise letter balances that have nearly swept the costly brass scale and weights out of existence. "It will be done because this particular market cannot possibly take anything higher. And the odds are that it will be done in Germany. And from Germany too, in the wake of the balance, will come, sooner or later, intelligently arranged cheap sets of apparatus for the teaching of chemistry."

The Orange Groves of Naples are planted with wild trees, which are grafted in the usual way and grow with bare trunks to four or five feet from the ground. The branches then run out and form the fruit-bearing portion of the tree. An ingenious and beautiful innovation has been introduced into one grove, and is described by Consul Neville-Rolfe in his latest report. Lemons are grafted upon the bare and non-productive stems of the oranges, about two feet from the ground, and trained in garlands from tree to tree, thus not only increasing the productiveness of the grove very materially, but adding greatly to the picturesqueness of its appearance. Orange trees being usually planted in rows at a measured distance apart, a grove has usually a geometrical appearance which is unsatisfactory, but this appearance is very much modified by the lemons, which break the lines in all directions. There is a legend which most people firmly believe that the grafting of a second fruit on the parent stem materially alters the type and quality, not only of the original fruit, but also of the graft, and it is sometimes gravely asserted that "blood oranges" are obtained by grafting the pomegranate on to the orange. This, says the Consul, is a complete fallacy. Both fruits retain their original quality, and neither borrows anything from the other. There is thus no difference between the lemons grown in the orange grove from those grown in the grove where lemons alone are cultivated.

PHARMACEUTICAL JOURNAL.

A Weekly Record of Pharmacy and Allied Sciences.

ESTABLISHED 1841.

Circulating in the United Kingdom, France, Germany, Austria, Italy, Russia, Switzerland, Canada, the United States, South America, India, Australasia, South Africa, etc.

Editorial Office: 17, BLOOMSBURY SQUARE, W.C.
Publishing and Advertising Office: 5, SERLE STREET, W.C.

LONDON: SATURDAY, OCTOBER 17, 1896.

THE VALUE OF CO-OPERATION.

One of the most remarkable features of recent years has been the revival of dormant local pharmaceutical associations, the quickening of those that had sustained their activity, and the formation of new ones in districts where local organisation had not formerly been on a systematic basis. The lesson taught by the partial but yet great success of the Pharmaceutical Society was only imperfectly learnt by the craft at the outset—those within the fold being in great measure content to depend entirely upon the efforts of their elected representatives, whilst the majority who failed to take advantage of the facilities the Society offered for united action apparently found a policy of comparative inactivity to their liking generally. Whether any of the dangers that have menaced pharmacy from time to time could have been dealt with more effectively had adhesion to the legally recognised body been the rule rather than the exception, it is, of course, difficult to say, though the probability is that things might have been better to-day on the whole. But in any case it is safe to affirm that continued and persistent local effort by the majority of chemists and druggists, during the past fifty years, would have gone far to remove some of the disabilities under which they now labour. Opportunities have been many, but inclination to take advantage of them has been lacking, and though a waiting policy is often justified, it has proved futile in the case of pharmacy, because those who have waited did not know when to act, or received insufficient support from their fellows when they were prepared to do so.

The present movement in favour of union and local action must be regarded, therefore, as an attempt to repair the shortcomings of former days, and is to be commended as full of promise for the future. No prejudices or personal feelings should be allowed to militate against the extension of the principle of unionism in our ranks, whilst the free and full growth of local associations should be encouraged to the utmost. The advantages of co-operation for defence and of association for mutual improvement, cannot be overestimated. Even the medical profession, which occupies a much more assured position than that of pharmacy, finds it necessary to resort to similar means in the struggle to maintain that position. With the General Medical Council, the British Medical Association and its numerous branches, and the Medical Defence Union all engaged in protecting the privileges of medical practitioners, we yet find the columns of the chief organs of the profession occupied week after week with statements of difficulties that have been experienced, and tentative suggestions for the removal of real or supposed obstacles to progress. How much more then is the strength that comes of union required by the pharmacist, who is surrounded by half-hearted and selfish competitors, often within the ranks of his own class?

Some people, doubtless, will never learn by the hardest experience the wisdom of casting in their lot with those bound to them by similarity of interests. Others, however, though apparently influenced by identical motives, may be gained over if they be but asked sufficiently often. And it is in this direction that local associations possess an advantage over wider organisations, for every member, besides being in close touch with all other members, has frequent opportunities of meeting outsiders and urging them to give evidence of sociability and sensibility alike by ceasing to display what is, after all, an unnatural tendency to segregation. More than one local pharmaceutical association has thus been enabled to boast, for the time being that it included more than nine-tenths of the local pharmacists in its list of members. And, as habits result from continued repetition of certain acts, so it is frequently found that enjoyment of the wider scope offered to the solitary human soul by communion with kindred spirits, and the sense of power attendant on the knowledge that sympathy and support will be available when required, lead to a desire for admittance to wider fields of activity. The provincial unionism thus becomes merged in the national, and its work is worthily crowned. But even then the former subserves a most useful purpose, as purely local requirements are always best dealt with locally, and matters of more general interest can also be profitably discussed by local associations, which thus serve as exponents of opinion in their particular districts. More than this even, valuable suggestions may emanate from local meetings, and matters that subsequently prove to be of vital importance to pharmacy at large may first be put in a proper light at some small and informal conference.

LOCAL ASSOCIATIONS AND EDUCATION.

Not the least important outcome of the work of local associations is the extent to which professional education has been encouraged amongst apprentices. Though Members and Associates of the Pharmaceutical Society have passively assented to the expenditure of large sums of money annually upon education, they have been slow to provide the material to operate upon, and as a result a mere fraction of those who pass the qualifying examination have passed through a course of training at the Society's School of Pharmacy. A larger number, but yet a small minority, are efficiently trained at other institutions, whilst some may succeed in satisfying the examiners by the aid of "cram," pure and simple. This is but natural, being the effect of the prevailing system, or want of system, under the influence of which apprentices go through their term of pupilage painfully ignorant of even the rudiments of subjects they ought to be fairly conversant with, and then attempt to assimilate the work of years in a few brief months.

Gradually, however, a change has come over the scene. Pharmacists have begun to realise that if they are to have competitors it may be as well to have competitors in whose minds are implanted the seeds of a professional spirit. This can best be effected through education, as the Founders of the Pharmaceutical Society pointed out more than half a century ago, and local associations are accordingly devoting their funds and energies to the development of educational

arrangements. It is possible that the tendency in our race to find out a way for one's self rather than follow a course recommended by authority may be, on the whole, a good one, but surely British pharmacists have paid and are likely to pay dearly for this little display of their instinctive spirit of independence. The persuasive eloquence of our leaders for fifty years has failed to convince us, as a class, of the advisability of undergoing a satisfactory course of college training, and when at last necessity would seem to impel us to face the matter fairly, we fly off at a tangent—and establish night schools in the country.

The main point is gained, however, when the principle of the thing is thus accepted. Granted the necessity of a systematic course of instruction in the scientific subjects having an immediate bearing upon pharmacy, and a right issue is assured. There is no special virtue attaching to a course of training undergone in one school more than another, but a great deal depends upon continuity of study and gradual assimilation of knowledge. For the present we must needs rest content with night classes, but in time there will be excited a healthy spirit of revolt amongst pupils, against being kept at work both day and night. There is every reason why pupils in pharmacy should enjoy a definite period of well-earned leisure, and once they insist upon this and are permitted regularly to attend day classes, as they ought to do, pharmacy will begin to ascend the upward plane. Meanwhile the ball is with the local associations, and we look to them to keep it rolling.

THE CASE OF THE UNFIT.

Whilst pharmacists should steadfastly set their faces against any continuance of the influx of insufficiently educated pupils, and warn all who enter pharmacy that considerable self-denial and pecuniary expenditure will be necessary if they hope to become fully qualified and enter into practice, they are yet confronted by the fact that amongst them are numbers who are socially unfit and have been deluded into the belief that pharmacy is a fine business, requiring no capital, and altogether suitable for those who are impecunious and yet crave after respectability. If these men qualify they compete with professionally trained men on an unequal footing; if they do not qualify the case is even worse. The best thing under the circumstances seems to do whatever is possible to help them to get properly educated, *i.e.*, if no other opening, outside pharmacy, presents itself. But above everything else this is the great source of our weakness at present.

There exist workmen who are altogether unable to realise the advantages of the protection afforded by the trades unions of their respective crafts. And so, in pharmacy we find individuals who are morally incapable of grasping the ideas underlying professional association for defence and improvement. Such individuals have probably started badly in the race of life, and are to be pitied more than blamed. Nevertheless, they are a source of lasting weakness, and the greatest care should be exercised to prevent the same class increasing. In the case of those in the above category who are willing to be helped and anxious to improve, every assistance should, of course, be afforded. Men who have entered pharmacy ignorant of its requirements, and have received insufficient general education, should be dealt with as leniently as the needs of the craft may allow—but firmly though helpfully.

ANNOTATIONS.

An Evening Meeting in London, the first of the present session, will be held at the Pharmaceutical Society's house, 17, Bloomsbury Square, on Tuesday, November 10, when Professor Norman Collie, F.R.S., will deliver a lecture on the "Discovery of Argon and Helium." This subject will naturally commend itself to those interested in modern chemical science and methods of research, but the meeting will also be of particular interest to Members and Associates of the Society as affording them an opportunity of making the public acquaintance of the new Professor of Chemistry in the re-constituted School of Pharmacy. Besides being a chemist of high scientific repute, Professor Collie possesses the additional advantage of having been personally associated with Professor Ramsay in the work which led to the now historical discoveries. He may thus be regarded as peculiarly fitted to deal with the subject chosen. It is hoped, therefore, that subscribers to the Society will largely avail themselves of their privilege to attend on this occasion.

The Ewing Pharmacy Prize consists of books to the value of one guinea, offered by Mr. J. Laidlaw Ewing, to the apprentice member of the Edinburgh Chemists', Assistants', and Apprentices' Association who shall show the best knowledge of pharmacy. Mr. Aitken, an ex-President of the Association, also presents a special book prize, value half a guinea, to the candidate who comes next in order of merit to the Ewing Pharmacy Prizeman, whilst a special third prize of 7*s.* 6*d.* is offered by the President of the Association. The competition takes the form of a written examination, candidates being required (*a*) to recognise four galenical preparations of the Pharmacopœia, give a written description of the processes by which they are made, name the ingredients, and give the proportions of the active ingredients; (*b*) to translate prescriptions written in Latin, and parse any part thereof, and describe the best method of dispensing them, stating the reasons for mode of procedure, and to render in Latin a prescription written in English; (*c*) to show a general knowledge of the posology of the British Pharmacopœia; and (*d*), of the British and metric systems of weights and measures. Further particulars may be obtained of the Secretary, Mr. William F. Hay, 139, Princes Street, Edinburgh.

Bicycling for Women is a subject of such general interest that it may be referred to in our pages without any need for apology, the more especially as a definite demand for information on the subject, from a medical point of view, undoubtedly exists. In the *American Gynæcological and Obstetrical Journal*, Dr. Dickinson expresses the opinion that bicycle saddles must differ as pelvic floors, buttock contours, and thigh modellings differ. The ideal seat for women would seem to be a broad one with a very short and blunt pommel in front, but it is suggested that each rider should be fitted with a seat, by sitting in a tray of modelling clay fastened to the bicycle, so that as the wheel is propelled an impression will be taken. From the mould thus obtained an aluminium plate is prepared and covered with felt and leather in the usual manner.

Quinine Manufacture in India.—The report of Dr. King on the cinchona plantations and quinine factory in Bengal shows that a considerable amount of work has been done during the year 1895-96. Almost the whole of the bark collected is handed over to the quinine factory and a considerable quantity has been purchased. The out-turn of quinine sulphate amounted to 9004 pounds, and that of cinchona febrifuge to 3124 pounds. Both products are sold at a cheap rate through the medium of the Postal Department, and there is a very considerable demand for them.

Distinction for Dr. John Attfield.—At the second International Pharmaceutical Exhibition recently held at Prague, the highest prize, a diploma of honour, was awarded to two only of the eighty-three exhibits in Group II., Pharmaceutical Literature. One of these consisted of the collected volumes of the proceedings of the Deutscher Apotheker-Verein, the other was a set of the fifteen editions of Attfield's 'Manual of Chemistry.' It would be interesting to know how many thousand students have been assisted in their studies by this noted book.

Kaffir Doctors in Natal, says a writer in the *Pall Mall Gazette*, are divided into two classes—medicine-men and herbalists. The former, known to their fellows as "Izinyanga zo kwe lapa," are especially proficient in the healing art; while the latter, rejoicing in the name of "Izinyanga zemeti," effect their cures through the medium of medicinal herbs, of which there are over one hundred species in the colony known to the natives. The root of the asper aster, a small plant somewhat like the daisy, with lilac coloured flowers, has been used with success by hunters on their dogs when snake-bitten, and herbs for cattle diseases are plentiful, though none has, so far, stemmed the onslaughts of rinderpest. The "isi-nwazi" is a favourite remedy for "redwater" in cattle, and is also employed as an emetic; the "um-belebele" is very valuable as an eye salve; but the most popular plant is the "u-mondi," whose aromatic roots act as a very wholesome tonic. When called in, the doctor receives a fee known as "ulugxa," varying from 3*s.* to half a guinea, according to his standing. Should a cure result a further fee is claimable, but failure to cure is unrewarded by payment beyond the call fee. "Every doctor has to take out a licence to practise from the magistrate or administrator of native law in the district, which must be favourably endorsed by the chief of his or her (for lady-doctors have existed from time immemorial among the Kaffirs) kraal. For this licence a payment of £3 is made, and the holder is immediately removed from the list of practising physicians if so rash as to sell, or profess to possess, love-philtres or charm to soothe the savage breast."

Salicylic Acid in Ipecacuanha Wine does not commend itself to the Wolverhampton stipendiary magistrate, who convicted in a case against Messrs. Wyleys (Limited) last week, the charge being one of giving a false warranty. The local borough analyst had certified the presence of 0·27 grain of salicylic acid per ounce in a sample of ipecacuanha wine purchased from a chemist and druggist who had obtained it from the above-mentioned firm, a guarantee being given on the invoice that the preparation was of B.P. strength, and the analyst's certificate did not raise any question as to deficiency in medicinal strength. The magistrate, however, declined to hear any evidence for the defence: it seemed to him, he said, that he had simply to decide whether the article was the British Pharmacopœia preparation or not, and quite irrespective of any evidence that the addition of a quarter grain of salicylic acid to the fluid ounce was harmless or made the wine better, he should hold that the wine in question was not a B.P. preparation, because the official formula does not order the addition of salicylic acid. The argument that the presence of salicylic acid was advantageous, in preserving the wine fit for carriage and consumption, was, he thought, quite beside the question. It was clear there had been no intention to defraud, but perhaps the use of stronger wine might have saved the necessity of using a special preservative. With that opinion pharmacists are bound to agree. The principle cannot be objected to, though its extremely stringent application in this case may seem severe.

The Western Chemists' Association, of London, is awaking after its summer slumbers, and the annual meeting will be held at the Westbourne Restaurant, 1, Craven Road, Paddington, W., on Wednesday next, October 21, at 8.30 p.m. In addition to the presentation of the report and balance sheet for the past twelve months, the Committee for the ensuing year will be elected on this occasion, and members of the Association are asked to prove the sincerity of their interest in its affairs by proposing the names of suitable candidates for the Committee, as well as by subsequently attending the opening meeting.

School of Pharmacy at Exeter.—A school of pharmacy is being established at Exeter in connection with the Exeter Technical and University Extension College, at the Albert Memorial Museum in Queen Street, particulars of which will be found in our advertising columns. A few months ago pharmaceutical classes were started by the College, and now it is proposed to open a school in which a complete course of instruction in all the subjects required for the Minor examination will be given. In addition to this, there will be the usual evening pharmaceutical classes, the course of work being spread over three consecutive years, in accordance with the recommendation of the Council of the Pharmaceutical Society. The Principal of the College is Mr. A. W. Clayden, M.A., F.C.S., and in addition to the ordinary staff of the College the services of Mr. A. H. Ware, pharmaceutical chemist, have been engaged for special pharmaceutical subjects. Great advantages are offered in the way of laboratory accommodation, and students will also have access to a fine materia medica collection. The new session will commence on Monday next, October 19, and will terminate with the Minor examination of July, 1897. The prospectus can be obtained from the Assistant-Secretary, Mr. John Trott.

Cultivation of Ipecacuanha in India.—Some years ago an effort was made by the late Dr. Anderson, while Superintendent of the Royal Botanic Gardens at Calcutta, to introduce the planting of ipecacuanha in India, and a number of plants raised by Messrs. Lawson and Sons, of Edinburgh, were sent out for that purpose to Ootacamund. It would be interesting to know whether there is any prospect of a successful result, not only because of the great importance of ipecacuanha as a remedy for dysentery, which is so dire a malady in India, but also because there are indications that the sources of supply of ipecacuanha from Brazil are becoming exhausted. Attention is just now being directed to this matter in the Indian papers.

Enormous Doses of Bismuth Subnitrate.—A case has recently been recorded by Matthieu (*Mod. Med.*, v., 168) of a patient suffering from hyperpepsia, who took more than two ounces of subnitrate of bismuth daily for twenty-four days. The hyperpepsia was not materially benefited, but the patient suffered no ill effects other than a slight constipation and pigmentation of the skin.

The Jubilee of Anæsthesia is with us, Friday this week terminating the half century that has elapsed since the first surgical operation was performed under ether. The Massachusetts General Hospital, Boston, U.S.A., was the scene, and Drs. Morton and Warren the actors, on this historic occasion, the date of which was October 16, 1846. Two months later, on December 19, the first administration of ether to induce anæsthesia in a dental case took place in England, at the house of Dr. Boott, whilst on December 22, Liston amputated a limb in University College Hospital under similar circumstances, the anæsthetist being, according to the *Practitioner*, "Dr. William Squire, who is still happily with us."

Death of Baron Mueller.—By the death of Baron Sir Ferdinand von Mueller, K.C.M.G., F.R.S., the Pharmaceutical Society loses one of its most distinguished Corresponding Members. Born at Rostock in 1825, he was trained as a pharmacist, and devoted much time to the study of botany and chemistry. Later, the young pharmacist studied at the University of Kiel, where he took the degree of Ph.D., and during subsequent years he investigated the botany of Schleswig and Holstein. In 1852, he became Government Botanist in Victoria, having during the previous four years travelled more than four thousand miles in Australia for botanical purposes, and his career has since been one long round of work and discovery in botanical science. He helped to explore North and Central Australia, became Director of the Botanical Garden, Melbourne, introduced the eucalyptus tree into Algeria and elsewhere, and was greatly interested in Antarctic exploration. More than a hundred papers by Mueller are referred to in the Royal Society's Catalogue, and alone or in conjunction with others he was the author of several important botanical works. Elected a Fellow of the Royal Society in 1861, and made a hereditary baron by the King of Würtemburg in 1871, he became a Knight of the Order of St. Michael and St. George in 1879. As a Corresponding Member the Pharmaceutical Society never had a better friend.

The Metric System of weights and measures, as was recently pointed out in these pages, is frequently made to appear complicated by comparison with the system at present legalised in this country. In itself it is simplicity idealised, but the average individual, when faced with statements in which the new and old weights and measures are laboriously compared, is apt to decide that what he has already learned and remembers with more or less facility is good enough to serve his purpose. In fact, the ordinary worries attending this mundane existence leave no inclination to face extra-ordinary ones. According to the *American Journal of Pharmacy*, a similar feeling exists in the United States, where it has been found that there is much quiet opposition to the metric system. A Philadelphia (U.S.A.) daily newspaper, which favoured the proposed change, went far towards retarding it by publishing elaborate tables of equivalents in the English and metric systems. "Now," observes our contemporary, "it is just this matter of comparison that frightens the public. When a man reads that a metre is equivalent to 39·37 inches, and that a gramme is 15·4324 grains, he naturally concludes that he can never take the time to bother with it. The way to adopt the metric system is to first get the weights and measures, and say nothing about any system but the one which is to be adopted." And this is undoubtedly the fact. Students and others can readily learn the new system "practically" in an hour or less, but they may work for ever with "equivalents," and commit them to memory, yet feel as confused and uncertain as at the outset. "Thorough" must be the watchword of the advocates of reform, in this as in any other instance.

A Weekly Index to the Journal was introduced last week as an experiment, the idea in view being to facilitate reference to the contents of back numbers pending the completion of a volume and the publication of the usual index. This plan is believed to have originated with the *Druggists' Circular*, a bulky monthly publication which occupies a prominent place among our American contemporaries. Considerable additional trouble is caused in preparing this index, as compared with an ordinary list of contents. This, however, will be amply compensated if the convenience of readers is served in a corresponding degree.

SHEFFIELD PHARMACEUTICAL AND CHEMICAL SOCIETY.

RE OPENING OF THE SCHOOL OF PHARMACY.

The twelfth session of the Sheffield School of Pharmacy was inaugurated on Thursday, Oct. 8, at the Masonic Hall, Sheffield, when Mr. H. E. Ibbitt, President of the Sheffield Pharmaceutical and Chemical Society, took the chair. He was supported by Mr. David Storrar, Mr. G. T. W. Newsholme, and Mr. J. Bateson (Kendal), Members of Council of the Pharmaceutical Society, the Rev. J. E. Manning, the Rev. T. S. King, Dr. H. C. Sorby (of Forth College), Mr. A. H. Allen (Public Analyst for Sheffield and the West Riding), Mr. W. Appleyard, Mr. W. Ward, Messrs. J. Preston, J. F. Eardley, C. O. Morrisson, W. Fox, A. R. Fox, W. B. Tolputt, F. Harrison, G. Squire (Secretary to the Sheffield Society), S. T. Rhoden (Secretary to the School), etc.

Mr. Squire having read letters of apology and regret for absence from the President of the Pharmaceutical Society of Great Britain and others,

Mr. S. T. Rhoden read the report of the eleventh session of the School, showing a decided increase in the number of students. The total number of students was twenty-eight, against eighteen in the previous session. The increase was somewhat due to the adoption of a class for the study of the British Pharmacopœia. Classes were held for the study of botany, materia medica, theoretical chemistry, and practical chemistry. The attendance of the students has been very regular, and their progress excellent, as is shown by the results of the examinations. The special prize of one guinea offered by Mr. Newsholme for the best herbarium collected within a radius of twenty miles from Sheffield, and properly mounted by a student without assistance, attracted two competitors, who showed a total of 420 plants. The Council, while congratulating itself on past successes, observed with surprise and regret that there are so many of the junior aspirants to the profession who do not avail themselves of advantages of the School.

The President, having spoken of the satisfactory character of the report, said the School was established and carried on to give the young men who were entering into business a good and well-grounded education in the sciences which are necessary—chemistry, botany, and materia medica, in order that they might afterwards practise successfully and safely the art of pharmacy. Sometimes the School had been carried on under great discouragement, but he thought, on the whole, it had done very good work, and was still doing good work. He congratulated the young men who by their attendance and industry had gained the marks which carried prizes. Offering a few words of encouragement to those who had not won prizes, the President pointed out that the great prize for which all were struggling was the acquisition of that knowledge which would enable them when they went forth into the world to practise pharmacy, to become a credit and an ornament to the profession.

Mr. Storrar then presented the prizes to the successful students as follow:—

Botany:—E. C. Carr and J. G. Hawksworth (equal).
Materia Medica:—Hamilton Milne and Arthur Exell.
Practical Chemistry:—W. H. Tallersfield and W. Slather.
Herbarium:—J. G. Hawksworth and A. Exell.

At the conclusion of this ceremony Mr. Storrar delivered an address to the students on "Pharmacists as Public Men." The text of this address was printed in full in last week's Journal (p. 312).

The Rev. J. E. Manning proposed a vote of thanks to Mr. Storrar for his paper, speaking of it as a very instructive and eminently practical address. No one, he said, who had any experience of pharmacists could fail to be struck by their civility and intelligence, and the responsibility and onerous character of their work enlisted the sympathies of all. He was sorry to hear that divided counsels existed in the ranks of pharmacists, for that was always a source of weakness. If they wanted to raise the status of the profession or increase its power and influence they must unite heartily in striving for the one special point that was being aimed at. He often thought it would be a valuable thing if ministers knew a little about pharmacy. He was acquainted with a minister who understood drugs and medicines, and the knowledge proved very useful to him, and increased his influence among the people. He thought pharmacists were engaged in a work of extreme importance to the welfare of the community. The lives of many people were more or less in their hands, and the more knowledge and the more learning that was given to this pro-

fession the better it would be both for those who practise it and for the public at large. They wanted in it intelligent men, and he could not see why the profession should not be regarded as one of the most honourable of the learned professions in the kingdom.

Mr. J. Austen, in seconding, said Mr. Storrar had presented some old ideas in a new, attractive and very convincing form. From what he could gather from the address, it was clear that pharmacists would have to look to themselves for the advancement of their profession, and not place much hope in the legislature. If only the chemists would join the local associations in greater numbers, and attend the meetings and lectures, some progress at any rate would be possible.

The Rev. T. S. King, supporting the vote, emphasised what had been said by previous speakers as to the uselessness of seeking help from the House of Commons. The men there are, he said, minding their own interests or the interests of their particular constituency, and they would not trouble themselves much about the needs of pharmacists or the Sale of Poisons Act reform. They must raise up a class of pharmacists who are in advance of their time, possessing sufficient aptitude and learning so as to be always ready to take any duty which the physician or surgeon imposes upon them, and fulfil it in such a fashion that the public may feel satisfied they are in the hands of perfectly competent men; that they may also do all that the time requires of them in the work of healing the sick, and attain to the highest realms of the medical and pharmaceutical art.

The vote was unanimously adopted, and Mr. Storrar briefly replied.

THE ANNUAL DINNER.

The annual dinner was held in the Masonic Hall, the same evening. The chair was again taken by Mr. Ibbitt, who was supported by a goodly number of pharmacists and friends. At the conclusion of the repast, Mr. Storrar, proposing the toast of the Sheffield Society, described it as one of the oldest of the provincial pharmaceutical societies. It had done good work and made progress through good and evil report. A great deal of its usefulness had been due to its devotion to and its encouragement of education, the evidence of which was seen in the flourishing classes that were held season by season. He supposed, however, that the society, like the parent society, suffered from the lukewarmness of many of the members and the unwillingness of the local pharmacists to become members. This was the thing which stood in the way of pharmaceutical progress throughout the country. This want of organisation among pharmacists was, he believed, due to the existence of a widespread spirit of indifference, and this was probably accounted for by the fact that these higher questions were hidden by the keenness of competition and the struggle to make ends meet. One of the great objects of that society should be to increase the membership of the great national society. He regarded the Pharmaceutical Society of Great Britain as the only trade society that could live and be of service, not only to the members but even to those who are outside. The Society was started as a trade defence association, but the originators of the Society considered the proper way to defend the trade was to educate and make more qualified the individual pharmacists, and although sixty years had passed it was seen more and more every day that the conception of the founders as to the best policy to adopt was the right one.

The President, replying, reminded the pharmacists of the city of their duty to support the local society and the institutions connected with it. The roll contained a goodly number of members; but, looking at the directory under the head of chemists and druggists, the number of names there showed that the membership ought to be at least double. He asked those present to constitute themselves recruiting sergeants and try to enrol the unattached members of the profession. As to the School, he expressed the opinion that the master who neglected to send or urge his apprentice to attend the classes was not doing his duty by the youth. He urged the members of the Society to make a better demonstration of their strength at the periodical lectures and discussions, especially when distinguished local scientists took the trouble to attend for the purpose of instructing and entertaining them.

Mr. J. Preston, who gave "The Pharmaceutical Society of Great Britain," dwelt upon the importance and extent of the work which was transacted by the Council of that organisation. The Council was composed of men having large businesses dependent upon them, and he thought the amount of time they spent on the duties of the Council required a considerable sacrifice on their part. The speaker alluded to the enormous amount of money which is spent by the Council, and referring to pharmaceutical education at the School in Bloomsbury Square, which he described as his pet subject, he asked why they in the provinces were content to allow the whole of this education to be given in London, and never sought to obtain a share of it themselves. They had great difficulties to contend with in Sheffield. The maintenance of their School cost a large sum of money, and time after time the local Council had met to consider the advisability of discontinuing this altogether, because it was such a financial burden. He considered that the Council in London ought to take up this question and deal with it on the broadest possible basis. His idea was that they should take in hand the education of provincial pharmacists in certain convenient centres.

Mr. G. T. W. Newsholme responded. He gave some details of the expenditure of the Council in connection with the Benevolent Fund, to show that the amount distributed in the relief of distressed pharmacists, their widows or orphans, was much greater than a previous speaker appeared to be aware. On annuities alone last year £2000 was expended. This year the item would be still larger. In addition to that Fund they had to deal month by month with a numerous class of people who made application for sums of money. Many of those relieved were entirely unconnected with the Society. The Council had decided that in its distribution the Fund should be catholic, and as a matter of fact fully three-fourths of people obtaining the benefit were outside the Society. He regarded it as one of the noblest things the Society had ever done when they made this Fund applicable to the whole trade. It was a painful experience the other day to see the largest list of applicants for the Fund that he had ever seen before. One case was that of a widow of a gentleman who had occupied a prominent position in the pharmaceutical world, but misfortunes came, he lost all his money and left his widow in distressed circumstances. Thanks to the existence of the Benevolent Fund the Council was enabled to grant the lady substantial assistance. Touching upon the recent re-modelling of the School at Bloomsbury Square, he said the idea in the minds of the Council was to make it the School for the kingdom. In reply to a question, he could not say when the new Pharmacopœia would be out, because the matter did not rest with the Council, but he thought its publication should be delayed no longer than was necessary.

Mr. W. Ward also responded. He appealed for extended support from the district for the Benevolent Fund. He said Sheffield had done fairly well in the past, but he thought the amount subscribed might be increased. Several grants of £10 or £15 had been made for distribution in the district, and a short time ago a widow in Sheffield received one of the annuities. He agreed with Mr. Preston on the subject of education, and hoped the Council would see its way to make grants to provincial schools. He thought if every chemist and druggist in the city became associated with the parent Society the probability was that the Council would be glad to make an annual grant towards the maintenance of the Sheffield School.

Mr. Bateson gave his experience, showing in what a kindly and sympathetic spirit the applications for assistance are investigated by the Pharmaceutical Council. The annuities are worth £50 per annum, sufficient to keep the wolf from the door. He feared that the distribution of assistance was a branch of work that would continue to grow, because the competition of stores and other things increased the difficulty of earning a livelihood, and he had suggested that there should be a special appeal on behalf of the Fund.

Mr. C. O. Morrison proposed the toast of "Scientific and Kindred Societies," which was responded to by Dr. Sorby and Mr. A. H. Allen, and "The Medical Profession," and "The Visitors," concluded the toast-list.

The proceedings were enlivened by instrumental and vocal music.

CHEMISTS' ASSISTANTS' ASSOCIATION.

OPENING OF THE SESSION.

The twentieth session was commenced on Thursday, October 8, in the rooms of the Association, 103, Great Russell Street. W.C. There was a fairly good attendance of members, Mr. C. Morley, President, in the chair. The Secretary (Mr. Moore) read the minutes of the last meeting, held on May 7, 1896, which were adopted as read. The following sixteen new members were proposed and accepted:—Messrs. A. Boyes, Cannar, J. G. Clarke, T. H. Dewy, Douthwaite, F. R. Ellis, H. Green, J. G. Hawes, S. S. Hewitt, H. Hymans, A. Lilly, J. McLanachan, Pennack, F. G. Pirie, R. S. Swinton, and W. A. Tasker.

INAUGURAL ADDRESS.

The President, who then proceeded to give his inaugural address, said that as they were on the point of embarking on the twentieth

session of their work, it was well they should be reminded of their duties and obligations to their fellows in pharmacy. He offered no apology for the main theme of his discourse, viz., an exhortation to outside assistants to join in the work carried on by the Association. It would involve the reiteration of expressions of sentiments which had frequently been voiced from that chair. As these had not resulted in any adequate response from by far the greater majority of metropolitan assistants, that constituted his motive for repeating some of them. He would try to point out what to him appeared to be the objections upon which were based the reasons why men abstained from joining the Association. There was, of course, perfect unanimity as to the disunion prevailing in the ranks of pharmacy generally; he therefore availed himself of the occasion to make a powerful appeal to the younger members of the craft to lose no opportunity of combining and attaching themselves to any movement affording inter-communication, for wherever a body of people congregated together with a common object, a bond of sympathy existed and good would eventually accrue. The chief reason urged by men for holding aloof was that the hours of duty were such that they became so surfeited with everything appertaining to "shop" that the idea of devoting an evening to aught of a scientific nature was to them utterly repellant. Might he here record his conviction that by far the greatest and most desirable object to be striven for, as a result of combination and unity in the trade, was a reduction of the hours of business. In the interests of health alone this should be strenuously sought for, and he had not the least doubt that if recourse were to be had to the proper means, this question could be satisfactorily settled. The arguments used to uphold this objection were reasonable to a certain extent, but wrong ethically, for the probabilities were that the adverse circumstances with which pharmacists had now to contend would in the future be augmented, and it behoved him to forfeit some of the spare moments, so that they might be applied to secure united effort, which was the only effective weapon that could be used. Another argument urged, and to him the only tenable one, was that their spare evenings were occupied in acquiring one or other branches of knowledge at the many institutions where secondary education was to be had so thoroughly and cheaply. But surely without being regular attenders at their meetings they might come occasionally, and the earnestness which the above worthy desire at self-improvement displayed would guarantee a distinct gain to the Association by their presence and co-operation. There was not, as far as he could see, the least justification for a *cui bono* cry on the part of him who withheld his support, for the Association was available for forming the nucleus of a Pharmaceutical Brotherhood, which it was essential should exist and yet does not. It was gratifying to notice that at least one effort of the right sort had recently been made. He alluded to the newly-formed Proprietary Articles Trade Association, which had for its object the suppression of the ruinous competition in the less technical part of their business. Without disparaging in any way the value of such an alliance, he thought that instead of this initiation having been literally forced upon the trade, how much better it would have been had it evolved from an active desire amongst chemists in times gone by for a better feeling to prevail, a result of moral suasion only. Dissension in any ranks could only be rendered nugatory by an appeal to the sympathies, and these could never be approached unless they had well-ordered inter-communion, and the latter was exactly what they were able to offer to their adherents. Therefore, he made an earnest appeal to all assistants to come and identify themselves with them; they extended a hearty welcome to all. Let them do at least what they could to weld the scattered forces of pharmacy into one cohesive and harmonious whole. In speaking of the many advantages to be gained individually by joining the Association, Mr. Morley said the desire was for men to make that room the forum of their first attempts at debate, and not to be afraid of inflicting their maiden efforts upon others; for it was only by overcoming the natural want of faith in themselves that a manly self-assurance could be acquired. In connection with the Association, there was too, with certain restrictions, the use of a valuable herbarium of botanical specimens for purposes of home study and also access to a small, but increasing library, and finally, for competition by members only, were offered every year the Association's two medals for the "Research" and "Essay" prizes respectively, each through the generosity of Messrs. Burroughs, Wellcome and Co., being supplemented by a valuable money prize and a standard pharmaceutical work. With such a plethora of returns for the investment of an annual subscription of five shillings, was it not astonishing that they had such a small roll of membership—an average of a hundred and fifty? In conclusion, if he had been unduly didactic and moralised too freely, he asked their forgiveness. He felt the consciousness of his unworthiness of the honour the Council had seen fit to bestow upon him in electing him President, but if the desire to promote the welfare of the Association and at all times to further its work was a sufficiently assuring attribute to possess, he could honestly lay claim to its ownership.

Vote of Thanks.

Mr. E. W. Hill (ex-President) said it gave him great pleasure to propose a hearty vote of thanks to the President for his inaugural address. It was not customary on that occasion to criticise the address, therefore he was not going to do so, especially as the President had not launched forth into pharmaceutical politics, but had wisely confined himself to the claims of the Association, which he had put before them on ethical grounds. Not only had he urged the claims on these grounds, but also on the material grounds on which they worked the Association. He thought every assistant ought to join them. There were many objections raised and reasons given why assistants did not join, and one reason they heard from time to time was because the Council was such a "cliquey" body. If there was any Association that was not so, it was the Chemists' Assistants' Association. If those who held such opinions would come and see for themselves, they would find that the President and members of the Council would be only too pleased to work with them and assist them in any way that lay in their power. In moving the vote of thanks to the President he might say that Mr. Morley was an old servant of the Association, and he thought few members had served it in so many branches as Mr. Morley had, whilst he was confident they would have a very successful session with him at the head. Mr. Morley had asked for their support, and he (Mr. Hill) was sure that he would receive that support.

Mr. C. E. Sage, in seconding the vote of thanks, said he knew of no gentleman it gave him greater pleasure to second a vote of thanks to. He had known Mr. Morley as one of their hardest working members, although he had not been on the Council as long as some of them. He would like to make one or two little suggestions before resuming his seat. From past experience he found that their members were always shifting. What became of the older members was a question he had always tried to solve; one-third of their membership changed every year, and he thought something should be done to retain them. It was surely not necessary that a man should live in London and attend every meeting to be retained a member. He thought that not only London assistants should be induced to become members, but also provincial assistants, so that they could be one united body. Why could they not have a combination of both London and country assistants?

Mr. MacEwan, in supporting the motion, said he did not think that provincial associations had the same difficulties to contend with as they had. There was the shifting population and the problem of getting new young men into touch with the Association. He did not know if it was a matter that had ever been properly tackled by the Council, but he thought that the time had arrived when they ought to do something to bring the assistants more in touch with each other. Londoners were apt to forget that there was no more difficult place to be tackled than London. His experience was that it was often easier for a man in Edinburgh to visit his friends in Glasgow than for one living in the north of London to visit his friends in the south of London. They could not expect a man in Hornsey to come into Great Russell Street to attend their meetings, and he thought that the Association at least once a year should visit the respective districts of London—north, south, east, and west. Of course, the assistants in each district would have to provide the necessary room, etc. It was simply a case of "If the mountain would not come to Mahomet, Mahomet must go to the mountain." He had expressed his suggestion in the hope that the C.A.A. might give greater assistance to assistants in the future than it had even done in the past. The Association was looked upon as the high-water mark in the personal respect of assistants, and it was their duty to make it so all over the kingdom, because the C.A.A. at London was bound to get men from all parts of the country. They should endeavour to maintain the high standard of duty in the future as in the past, and get into personal contact with all those interested in the drug trade. He had the hope that the session upon which they had just entered would be one of the best in the work of the Association.

In replying to the vote of thanks, Mr. Morley said with regard to the suggestions of Mr. MacEwan to incorporate the outlying

branches of the drug trade, he thought it an admirable one, and if there was any possible way of dealing with it, the Council would do all it could to help to realise it, but he was almost afraid that it was beyond their power to realise it; personally, he could not see the feasibility of it, at least for the present session; it would disorganise the arrangements there, and a good deal of energy would be expended; still the idea was one well worth consideration. With regard to Mr. Sage's remarks, he thought they did not lose any men by anything they had taken umbrage at, in anything done by the Council; they changed about so much, and many took upon themselves the responsibilities of business. He thanked them very heartily for the kind manner they had listened to him, and also for the vote of thanks accorded to him.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION.

OPENING OF THE SESSION.

The opening of the session of this Association took place on Wednesday, October 7, at the Exchange Restaurant, Birmingham, when Mr. H. S. Lawton delivered his presidential address to the members, of whom there was a good assemblage. In the course of his remarks the President said that, having accepted the office his colleagues had elected him to, he should do his best to justify the choice made. He pointed out the necessity of increasing the membership of the Association, and remarked that there were several very able assistants in the city and district who, either from lack of interest, or a certain amount of prejudice, had not joined them, but who he felt only needed to be persuaded to recognise the manner and scope of their work to see that it might be of great assistance to them in any dealings they might undertake. He thought the fact that they had a membership of sixty-six after so short an existence showed that the position of the Association was assured. They had a small balance in hand and the Committee desired that each session should be self-supporting. The programme for the first half of the session had been definitely arranged and several papers on interesting topics had been promised. One meeting had been set apart for the reading of short papers by members, and he hoped that this would inspire confidence and encouragement among the young pharmacists.

After referring to the social element of the Association, Mr. Lawton said the organisation had been the means of engendering a thoroughly good understanding amongst those in business who were members. The employers were in most cases aware that the assistants being associated were able to be of more service in various ways. Their business was of necessity a personal one, and an assistant who was pleasantly and usefully occupied in his leisure time was more likely to remain for a longer period in the place where he was comfortably located. Besides having an interest in, and improvement of himself, he could not fail to make the business in which he was engaged improve along with him. Each individual engaged in the trade could share, if he chose, in the advance of pharmacy. They had more or less opportunity of proving more useful to the medical profession, and by proving that they were capable of prescribing in any form they would wean medical men from the tendency to rely upon proprietary forms of drugs. To his mind it was mainly by the general improvement of dispensing in ordinary, and by the introduction of new and improved forms of dealing with remedies, that they might render their business more really what it should be. He hoped that during the session they would have papers dealing with this subject. Let them get to details and expound improvements on existing methods for the general benefit. That need not prejudice anyone and would make membership of their Association a necessity to any assistant in a chemist's business worthy of the name.

It was pointed out that there had been several attempts to obtain legislation for the benefit of the pharmacist, and that it was reasonable to suppose the Pharmaceutical Society might in time make another attempt to draft a Bill, having for its object the improvement of those engaged in the business. It was through associations like theirs, if they were only numerous enough, and made up their minds what they wanted, that Parliament would be inclined to grant any just demand made on their behalf. A well-considered Bill might yet be prepared, and if it received the unanimous support of the local associations might be carried through Parliament, and thus place the qualified man on his proper footing. Parliament would, no doubt, approach any legislation from the standpoint of the public good, and pharmacists would, therefore, have to prove that it would be to the advantage of the public that drugs should only be served by qualified chemists. In the sale of poisons, patent medicines, and secret nostrums the public would undoubtedly benefit by having the composition compulsorily printed on the labels. This might also be of assistance to medical men when consulted by patients who had done themselves serious harm by dosing themselves with some largely-advertised patent medicine. In conclusion, reference was made to Sir John Lubbock's Shop Hours Bill, and it was suggested that if the occasion arose when a blow could be struck for the general good their Association would be found prepared, strong and united.

A hearty vote of thanks was accorded Mr. Lawton for his address.

BRIGHTON JUNIOR ASSOCIATION OF PHARMACY.

OPENING OF THE SESSION.

The seventh annual session of the above Association opened on Wednesday, October 7, with a meeting at the headquarters, Newburgh Hall, Cannon Place, at which the President, Mr. A. T. Jeeves, made his inaugural speech. There was a large attendance, and things looked very promising for a successful session.

Mr. A. T. Jeeves, in the course of his address, exhorted the members to fulfil their duties to the Association to the utmost of their power, because in his opinion it would be on the influence of such societies and organisations that the future welfare of the craft must depend. The day of individual influence was past and gone, and therefore it behoved every one of them to exert themselves to the fullest extent to increase the membership roll of their Association, and by so doing bring the rising generation of the profession into touch one with another, that they may be educated to the knowledge of the fact that if they wish to keep their trade from being further contaminated by the baneful influence of company pharmacy, etc., they must make themselves a power, which it is impossible and out of the question to attain by individual effort, but which might be easily acquired by thorough co-operation and universal organisation. Every assistant should join an association, and should make it his aim to further the interests of the profession of which he is a member. With regard to the ensuing session, they had a good programme before them, and he trusted that he would receive their support to make the success equal, if not surpass, that of any previous session. The Pharmaceutical Society Benevolent Fund contribution box, which has done such good work in past sessions, would be on the table at each meeting, and, he hoped, would command attention.

Mr. G. F. Lemmon, in proposing a vote of thanks to the President, hoped that every member would take to heart the words which they had just heard from Mr. Jeeves, as he was sure that if they would follow his advice the result must be beneficial.

The vote of thanks was seconded by Mr. H. G. Price, and was very heartily accorded.

The meeting was concluded with a short vocal programme, in which the following gentlemen took part:—Messrs. H. G. Price, E. Beckwith, J. Orr Armour, H. E. Hedgcock, Little, Santel, etc., etc.

LIVERPOOL PHARMACEUTICAL STUDENTS' SOCIETY.

ELECTION OF OFFICERS.

The Annual General Meeting was held in University College at 8.30 p.m., on Thursday, October 8, 1896, the President (Mr. T. S. Wokes) in the chair.

Communications were announced from Messrs. J. Gilbert-Jackson, H. Peirson, F. Walker, and Theo. H. Wardleworth, regretting their inability to attend.

The report of the Hon. Secretary (Mr. H. B. Morgan) was read and adopted. The Hon. Treasurer's report showed a balance in hand of £4 19*s.* 1*d.*, which announcement was received with applause, and the report adopted. Three new members were elected

The election of Council for the ensuing session then took place with the following result:—President, J. Jones; Vice-Presidents H. Peirson and H. B. Morgan, Ph.C.; Hon. Treasurer, R. H Mitchell; Hon. Secretary, Prosper H. Marsden, Ph.C., F.C.S

Messrs. R. C. Cowley, Ph.C., G. V. C. Last, George McLoughlin, J. Park, F. Walker, H. Wyatt, junr., Ph.C., Theo. H. Wardleworth, T. S. Wokes, Ph.C., and Wren.

An addition to the rules was made, and the proceedings then terminated.

PHARMACEUTICAL FOOTBALL CLUB.

ELECTION OF OFFICERS.

At the Annual General Meeting, held on Thursday, October 8, the following gentlemen were elected as officers for the coming season:—

President: Professor Greenish (Dean of the School of Pharmacy); Vice-Presidents: Professor Green, Professor Collie, Mr. Walter Hills (President of the Pharmaceutical Society), Mr. M. Carteighe, and Professor Attfield.

Mr. Harold E. Matthews was elected Honorary Secretary, and Mr. Jones was re-appointed Honorary Treasurer.

The meeting adjourned until Monday, October 12, when Mr. J. Fothergill was elected captain; Mr. Chandler, vice-captain; and Messrs. Lean, Umney, Wilson, Smith, Wickens, and Nelson, members of the Committee.

The football season was commenced on Saturday last. A strong muster of students assembled on the Club ground at Wormholt Farm, Shepherds Bush, and a capital scratch match was played.

The Club is to be congratulated upon the excellent material it promises for a smart and enthusiastic team.

The next practice will be on Saturday, October 17. Kick-off at Wormholt Farm at 3 p.m.

PHARMACEUTICAL SOCIETY OF IRELAND.

MEETING OF THE COUNCIL.

On Wednesday, the 7th instant, the first monthly meeting of the Council of the above Society after the recent annual election, took place at their house, 67, Lower Mount Street, Dublin. The members of Council who attended were Messrs. W. J. Wells, Junr., Downes, Conyngham, Bernard, Beggs, Hayes, and Whitla (Monaghan). On the motion of Mr. Hayes, seconded by Mr. Beggs, Mr. Wells was re-elected President. On the motion of Mr. Whitla, seconded by Mr. Bernard, Mr. Downes was re-elected Vice-President. On the motion of Mr. Conyngham, seconded by Mr. Bernard, Mr. Beggs was re-elected Honorary Treasurer. Messrs. Grindley and Simpson were re-elected Auditors. The President mentioned that a letter had been received from Messrs. Evans, Son and Co., of 56, Hanover Street, Liverpool, presenting to the Society a cabinet of materia medica specimens. On the motion of Mr. Hayes, seconded by the Vice-President, thanks were voted to the donors for their handsome gift. A letter was received from Mr. Charles C. Brooks, a Licentiate of the Society who had opened a pharmaceutical shop in Weymouth, complaining that he had been fined two penalties of £5 each for styling himself a pharmaceutical chemist and for keeping open shop.

The President: No doubt our licence is not good in England and the licence of the English Society is not good here; and therefore we cannot give this gentleman any help in the matter.

Mr. Bernard remarked that those who were opposed to the Society prosecuting Englishmen who opened in that country should know that they were getting the same treatment on the other side. Some other business having been disposed of, including the appointment of the several committees, the Council adjourned.

EXAMINATION RESULTS.

Messrs. M. Carey and J. A. Loughridge (equal), S. J. Moore, T. Beaumont, J. Carroll, L. J. Leeson, R. Houston, G. J. O'Neill, R. G. Allen, and J. F. Dillon have passed. Two other candidates have been passed, subject to the ratification of the Council, and nine candidates have been rejected.

At an examination held at Dublin for the licence to act as a registered druggist, the following passed:—Messrs. A. Harding, J. Herring, H. Merrin, W. J. Nolan, and W. A. Twinem.

At the examination for the qualification of assistant to a pharmaceutical chemist, Mr. A. C. Ross passed.

PHARMACEUTICAL CHEMISTS' AND APOTHECARIES' ASSISTANTS' ASSOCIATION OF IRELAND.

ARRANGEMENTS FOR THE SESSION.

A committee meeting of this Association was held on Friday, October 9, at the Pharmaceutical Society's House, 67, Lower Mount Street, Dublin. Mr. D. McGregor Watson, L.P.S.I., presided. The minutes of the last meeting were read and confirmed. Mr. W. J. Payne wrote stating that as he had left Dublin and was at present residing in Belfast he regretted his further inability to act as honorary treasurer of the Association. He promised to furnish a statement of accounts in the course of a day or two, and forward to the President a cheque in settlement of the credit balance in his hands. Mr. Payne's resignation was accepted with regret, and a warm eulogium paid to that gentleman for his zeal on behalf of the Association during his stay in Dublin. Mr. W. J. Hardy, L.P.S.I. (hon. secretary), said the funds were now some £5 to the good, and there were still a number of subscriptions unpaid. When all dues were received and paid, there would be a substantial balance on the right side. Messrs. H. T. Turner, M.P.S.I., and H. Hunt, L.P.S.I., were appointed auditors, and it was arranged that these two gentlemen should meet during the coming week and present the statement of accounts at the next meeting of the Committee.

Letters were received from English wholesale houses with reference to the meetings of the Association during the ensuing winter. The Secretary was directed to supply the required information. Mr. Turner asked if it had been finally decided to hold the future meetings fortnightly on Friday evenings. The Chairman replied in the affirmative. Regret was expressed at the indisposition of the Vice-President, Mr. W. McCarthy, M.P.S.I. Mr. Howie, of Messrs. Barron, Harveys and Co., wrote promising to give a lecture illustrated with lime-light views on November 6 next. Mr. Howie's kind offer was accepted with thanks, and it was resolved to so inform him through his friend, Mr. McCarthy. The suggestion to hold the general business meeting of the Association on the last Friday in the present month, so as to leave a free evening for Mr. Howie's lecture, was approved of, and it was resolved that Mr. Turner should take the necessary steps as a preliminary to seeking the permission of the Pharmaceutical Council to lend the large hall for the opening meeting on November 6. Mr. O'Sullivan stated that owing to the departure from Dublin during the recess of several members of the Committee, it would be necessary to fill up the vacancies as soon as possible. The Chairman said it would be better to wait for the annual meeting in November, when a new committee would be appointed. Mr. O'Sullivan agreed, and thought with the introduction of new blood the Association would be still further strengthened.

Mr. Watson said there must be some inducements held out to non-members to join the Association, and no better one in his opinion could be offered than a free copy of a trade journal. As things were going on they would shortly be in the unique position of having too much money and little or no expense. He thought they should support the *Pharmaceutical Journal*, which, in his estimation, was an excellent paper and one they should all go in for. Some further conversation having been held on the matter, the Hon. Secretary was directed to write to the Publishers of the *Pharmaceutical Journal*, asking the cost of supplying weekly to the members of the Association a minimum of fifty copies of that paper.

Mr. Hardy and Mr. O'Sullivan, hon. secs., stated they would meet during the week to prepare the yearly report, which would cover the ground traversed by the Association since its inception. Mr. O'Sullivan suggested getting the names of new entrants to the trade, in Dublin, with the object of inviting them to become members of the Association. He asked the members generally to assist in this direction. The question of preparing a syllabus for the ensuing three months was discussed. Mr. Turner said he would probably induce his friend Mr. Smith to read a paper. No doubt Mr. Hegarty, L.P.S.I., would also read a paper on alcohol. The advisability of holding a social meeting and soirée during the session was debated and approved of generally. This matter, however, was left over for the new Committee. It was decided to throw open the meeting on November 6 to non-members, and to send three cards of admission to each member. On the motion of Mr. Hardy, seconded by Mr. O'Sullivan, it was resolved unanimously to invite Mr. W. F. Wells, President of the Irish Pharmaceutical Council, to preside at the opening meeting of the Association on November 6.

CORRESPONDENCE.

"Dry Extracts Wanted."

Sir,—This heading to the letter of "Medicus," on page 326 of your last issue, suggests a question as to some of those indicated. Are they wanted? With regard to quillaia extract, dry and powdered, there exists a steady demand, and both forms have been quoted in the list of my firm for some years.

Taraxacum is also sometimes required, but is so very hygroscopic that the powdered extract will hardly stand one or two openings of an air-tight vessel containing it, even if it has been previously mixed with milk sugar. The particles speedily fuse together and form a stiff mass, which cannot be manipulated without first breaking the bottle containing it.

Scoparium extract, either in mass or powder, I have never known to be required during a long experience. When one reflects that to promote the action of scoparium as a diuretic it is usually administered with or followed by copious warm draughts, its extract does not seem to be pressingly called for. Still, there should be no difficulty in producing it in the forms suggested.

Jalap presents no great obstacle either, and would present still less if the Pharmacopœia would only give effect to the general opinion that the aqueous portion of the extract is all but inert.

Squill will give with alcohol an extract capable of being presented either as a hard dry mass or a powder, but in this case also memory furnishes no instance of it having ever been required.

Galen Works, London, S.E. JOHN MOSS.
October 10, 1896.

Prescribing and Dispensing.

Sir,—I have just read in your issue of Saturday last a letter from Dr Cooke and note the extravagant assertion he makes in regard to those engaged in our business. In the first instance, he accuses us of being somewhat automatic; to quote his own words, we are measurers and mixers that require no great skill. Of course, in giving facts we must judge by the majority, and I maintain that the latter make a large amount of preparations used, excepting where, from the small quantities required, it would be more economical to buy. I admit we are gravitating as a necessity towards buying a number of preparations used, but whose fault is it? Why, the medical men, who order proprietary compounds already prepared, frequently at the recommendation of some verbose Knight of the Road.

When he asserts chemists court accidents as a *vade mecum* for prescribing, it is really too absurd to entertain. When an accident occurs the police, usually from a humanitarian point of view, bring the unfortunate subject to the nearest chemist's shop, and in ninety-nine cases out of a hundred the wound is simply bandaged to staunch bleeding, a cab got, and the patient either sent home and recommended to call in the medical man, or to the hospital. There is no remuneration, but business is disarranged, and too often the shop disfigured with blood, etc., and the entrance blocked with an inquisitive crowd, and the chemist may subsequently pose as an unwilling witness at a coroner's inquest. A circumspect chemist would never charge for services rendered, as, if it should prove fatal, and the medical witness should say "if the chemist hadn't done so-and-so things might have been different," possibly the latter might incur a vote of censure from the jury. I can assure Dr. Cooke, if he will influence the authorities to the extent that all accidents should be conveyed to the nearest surgeon (at the same time point out to the profession that at the intimation of an approaching accident patient, they should never be "not at home") or hospital, he will earn the everlasting gratitude of chemists generally, and according to his opinion safeguard the welfare of the public.

Coming to prescribing I maintain the case he quotes is a rare exception and not the rule (is it a chemist or herbalist?), and if he knows a case as he states he ought certainly to try and put a stop to it. I have been engaged in the business considerably over twenty years in different parts of the country and different classes of business, and have never once seen or heard of any one of the instruments he mentions on the premises for use.

Coming to high prices for dispensing, competition is too keen for anything extravagant. It frequently happens that prescriptions from a dispensing surgeon are only seen either in the middle of the night or Sundays, when under the circumstances one expects to be remunerated above the ordinary. The boot is on the other foot; it is the practitioner who sends his own medicines that drive the public to the chemist. They usually charge from 2*s.* 6*d.* to, say, 5*s.* per visit, give a 6-oz. mixture, ℥i. every four hours, and if they do not alter the medicine before it is finished, religiously call by the time it should be taken; result, another bottle at the price of a visit, which is frequently carried on *ad nauseatem*; and when the chemist suggests calling in the doctor, they shrug their shoulders, say they cannot afford it, and press him, which he good naturedly frequently does give a mixture *in loco*. If Dr. Cooke would have a chat with his neighbouring chemist, I have no doubt he would come to terms for dispensing his prescriptions satisfactory alike to all. In conclusion, I can solemnly assure Dr. Cooke that the majority of chemists would be only too glad to give up any prescribing if medical men in their turn would give up dispensing, and we should each take our own place, as qualified by our training, to the mutual advantage of the patient.

October 10, 1896. JUSTITIA (60/25).

Sir,—We are again confronted with medical rebuke on the old question of prescribing. So far, little consideration has been given as to what part the public should play (in whose interests this matter, I suppose, is being considered) for their future safety. If it is not presumptuous to have a knowledge of the uses of the stethoscope, bistoury, etc., I think there are a few chemists who will admit of the presumption of using these or any other instrument professionally for the purpose of attempting diagnosis. But, sir, the public as well as ourselves have the liberty of action for the benefit of their own bodies, and were they to seek the doctor for every minor ailment, we should require ten times as many doctors as at present exist. The public are being more and more educated (even by the medical men who write testimonials for proprietary medicines) that certain drugs or preparations have specific actions for their ailings, and voluntarily buy them, and perhaps go a little further and consult the chemist for a better remedy, and for these minor ailments they know that the doctor offers no more further diagnosis than prescribing the usual specifics, and more often than not they refuse to see a doctor when so advised. Your correspondent Dr. Cooke has levelled the art of dispensing and chemist's duties generally down to the *modus operandi* of a doctor's dispensary. It would be interesting to know the percentage of qualified doctors' dispensers in this country, for I venture to say that a doctor's diagnosis, however skilful, must be limited in its application for good if he or his assistant have not a free hand in the manipulation of his prescription. Does Dr. Cooke expect that the steadily advancing curriculum for a chemist is to train him only to invest in large laboratories to prepare drugs and chemicals for the doctor? No, I take it that the pharmacist is designed for a wider scope, and amongst other things that the doctor's prescription shall be so manipulated that the desired reaction shall be effected by their superior knowledge of dispensing, a lack of which knowledge is exemplified in the statement that all that is required in dispensing is promiscuous measuring and mixing; posology, incompatibility, etc., so often requiring correction in the past, to be avoided in the future. If Dr. Cooke has the public benefit so much to heart, will he stir up his own body to suppress the consumption of patents, where one man (without knowledge, let, or hindrance) prescribes for the million?

Winchester, October 10, 1896. S. G. BARTLETT.

"The Aim of Preliminary Education."

Sir,—Having read the above interesting and instructive address by Mr. R. Brudenell Carter, in which we are "strongly" urged to "devote" our "best energies to obtaining a thorough knowledge of 'our' own language," I note with no small surprise that the writer himself is "a frightful example" of that very misuse of words he so strongly deprecates.

Amicus Plato, Amicus Socrates, sed magis amica veritas, and as I can say with him "I feel very strongly, gentlemen, that you can acquire nothing—more important, or—more certain to be valuable than the power of saying or writing precisely what you mean, and—of perceiving the exact meaning of whatever you write or say," I hope he will pardon me if I point out a few errors, both in practice and precept. I have so greatly profited by some of his remarks, as, for instance, about that "meaningless American coinage 'reliable,'" that it seems an ungracious task to undertake. I can only hope my strictures, if unpalatable, will at least be profitable.

Let me first thank him for so clearly explaining the rule that restricts solely to active verbs the use of the affix "able."

I also heartily concur with him (not that my concurrence is, *per se*, of any special importance) in his recommendation of "one

of the most delightful books in the language, Cobbett's 'English Grammar,' the only fault of which is that there is not more of it." But knowing it so well, will he excuse a naïve surprise that he has not known it better, and a modest confession that if in any respect I am able to improve his English, I owe it all to Cobbett? Now for some of my corrections. I venture to suggest that persons neither "ignorant" nor "careless" may talk and even write of being "under circumstances." He seems to restrict the prefix "circum" to around, like a ring-fence, forgetting it may also mean around, like an atmosphere. "Things that stand around," for aught that I can see, may also stand above or below, or in any other position warranted by the Latin word "circum." Again, he objects to "phenomenal" as the adjective of phenomenon, but when "the thoughts of a philosopher 'can' be expressed in the phraseology of a charwoman," why should they not? Granted that phenomenon means "something that happens and that can be seen," does it not also mean something more? A sunrise may be seen every morning, but it must cease to rise to rank as a phenomenon; and when "quite a respectable newspaper" says of some recent weather that it had been "phenomenal"—the writer merely meant to say that it was *unusually* unusual, and I question if he could have found a more expressive word. The word was coined to express *rarity*, and as such I submit that it admirably answers the purpose. As for the address itself, I fear those who heard it with so much interest will wish the proof reader had struck out a little of its superfluous verbiage.

Just as a forester will tell you he cannot see wood for trees, so a writer, in trying to be explicit, will sometimes only become verbose. Oh, for a Cobbett to dissect that passage on "The Effects of Public-School Teaching." Like the bishop's letter, it needs translating into English. "The method of education which has given England the majority of her greatest men" should surely be read as that "which England has given the majority of her great men." And was it to its credit that it was responsible for a certain proportion of success, or to its discredit that the success was very imperfect? If "a young man thus educated" would know Latin, why dilute it by using three words where one was sufficient, and when the longest of the three was required in the very next sentence? As for Professor Flinders Petrie, who is only quoted to be refuted, he can take care of himself, but what Mr. Carter wishes to enforce is, it appears to me, that "an imperfect acquaintance with language necessitates the imperfect expression of any but the most rudimentary ideas." His own abhorrence of slipshod English, and the importance of the subject to the large body of students whom he has addressed, will, I hope, be sufficient excuse for troubling you at such length.

Ely, October 13, 1896. LINCOLNE, SENR.

ANSWERS TO QUERIES.

NAME OF PLANT.—*Euphorbia paralias.* [*Reply to* J. A. B.—60/22.]

OPTICAL INSTITUTE.—We are endeavouring to get the information for you. [*Reply to* QUAESTO.—59/31.]

GROWTH ON OAK-LEAF.—It is an oak-gall which we may be able to name for you shortly. [*Reply to* A. H. P.—60/20.]

"F. I. C." AND "F. C. S."—Refer to page vii. of the Educational Supplement published with the Journal for September 14, 1895. [*Reply to* L. G. C.—60/21.]

BOTANICAL SPECIMENS.—(1) *Malva sylvestris;* (2) *Cornus sanguinea;* (3) *Smyrnium olusatrum;* (4) *Linaria cymbalaria;* (5) *Smyrnium olusatrum,* in fruit. [*Reply to* R. D.—60/24.]

"DRY" SHAMPOO.—Tincture of quillaia, 4 drachms; borax, 4 drachms; carbonate of ammonium, 4 drachms; oil of myrcia acris, 10 minims; rectified spirit 5 ounces; distilled water to one pint.—[*Reply to* RHEI.—60/15.]

SOLUTION FOR ELECTROPLATING.—Silver nitrate, 3½ ounces; potass. cyanide *q. s.*; distilled water to make 2 gallons. Dissolve the silver nitrate in about a quart of the water, then add sufficient cyanide to redissolve the precipitate at first formed and make up the final volume to 2 gallons. The current from three or four Grove's cells will be ample. No, it is not necessary to remove the old plating before putting on the new, if the surface is free from dirt. [*Reply to* ALOIN.—60/28.]

SOLUTION OF GUTTA PERCHA.—Carbon bisulphide is one of the best solvents for gutta percha. A thick solution so made we have found to be a capital cement for bicycle tyres. After it is once well set nothing but heat will remove the tyre fixed with this cement from the rim of the wheel. A mixture of benzol and bisulphide is also used for a thinner fluid for repairing punctures. [*Reply to* PHARMACIST.—60/35.]

SPIRIT PROOF POLISH FOR COUNTER.—The ordinary spirit varnishes and polishes will not answer for your purpose. You will probably find a mixture of yellow wax and curd soap give a polish which will best resist the markings of spirit. Take 4 ounces of good beeswax and 2 ounces of shredded curd soap, melt them together, and when hot gradually stir in a hot solution of caustic potash, ¼ ounce; water, 4 ounces; stir till cold. Rub a little of this on the surface of the counter, then polish well with a soft dry cloth. [*Reply to* "REX."—60/17.]

OBITUARY.

CROMPTON.—On July 20, Robert Crompton, Chemist and Druggist, of Chorley. Aged 75.

WALSH.—On September 28, John Edwin Walsh, Chemist and Druggist, of Southborough. Aged 64.

SMITH.—On October 3, Thomas James Smith, Pharmaceutical Chemist, of Hull. Mr. Smith had been a member of the Pharmaceutical Society since 1856; also F.G.S., F.C.S., and for many years played a prominent part in the public life of Hull, where he was greatly respected by his fellow citizens. He first entered the Town Council in 1875, and sat as a Councillor until 1892. As the founder of the Hull Charity Organisation Society, up to the early part of this year he regularly attended the weekly meetings of the sub-committee to deal with the various applicants. In 1874, when the town subscribed a large sum of money to found the Jameson Scholarship, Mr. Smith took a large share in the detail work of the scheme, and from then to the present time has acted as honorary secretary to the trustees. For many years he was Honorary Secretary to the Hull Chamber of Commerce, and for the past thirteen years was the honorary treasurer. He was also for two years President of the Chamber. Amongst other movements he acted as Honorary Secretary to the Queen's Ward Committee in the Jubilee year, to the Mansion House Relief Fund Committee during the great distress prevalent in the town in 1878 and 1879, and for twenty-three years he was one of the hon-secretaries to the Hull Hospital Sunday Fund. The remains of the deceased gentleman were interred at the Hornsea Cemetry on Tuesday, October 6.

PARNELL.—On October 8, George William Parnell, Pharmaceutical Chemist, of Hastings. Aged 69.

PUBLICATIONS RECEIVED.

GOUT AND GOUTINESS AND THEIR TREATMENT. By WILLIAM EWART, M.D., Cantab, F.R.C.P. Lond., M.R.C.S. Eng. Pp. 589. 12*s.* 6*d.* London: Baillière, Tindall and Cox, 20 and 21, King William Street, Strand. 1896. From the Publishers.

GUIDE TO THE EXAMINATION IN PRACTICAL CHEMISTRY FOR THE CONJOINT BOARD. By PERCY A. E. RICHARDS, F.I.C., F.C.S. London: Ballière, Tindall and Cox. 1896. Pp. 57. From the Publishers.

ANONYMOUS COMMUNICATIONS.

In no case can any attention be paid to letters intended for publication, or requests for information, unless they are verified by the names and addresses of senders.

COMMUNICATIONS, LETTERS, ETC., have been received from Messrs. Barnett, Bartlett, Bayley, Bindloss, Cleeland, Cocks, Cracknell, Crofts, Hill, Jones, Kent, Knight, Marsden, Moss, Nagelvoort, Newsholme, Picken, Preston, Price, Reynolds, Schacht, Spilsbury.

TESTING OF ESSENTIAL OILS.*

Much attention has been given by Messrs. Schimmel to the determination of the characters of essential oils and to the methods of detecting admixtures. In the report recently issued by this firm some of these methods are described as follow:—

I.—Bergamot Oil.

Specific Gravity.—Most adulterants cause alteration of specific gravity in the case of this and other essential oils, and the kind of alteration often furnishes a clue to the adulterant. The specific gravity of true bergamot oil is tolerably constant between 0·882 and 0 886. Any deviation beyond those limits is a ground for suspicion. Addition of turpentine, lemon, or orange oil, alcohol, or distilled bergamot oil lowers the specific gravity, while addition of fat oil, cedar wood oil, or gurgun balsam increases it.

Rotation.—Polarisation is of less importance with bergamot oil than with lemon or orange oil, but it is useful as a control of other data. The dark colour of the oil does not admit of the usual 100 M.m. tube being used, and one of 20 M.m. has to be taken. The variation of the rotation of pure oil is much greater than that of specific gravity. Samples showing a rotation (calculated for 100 M.m.) differing from +8° to +20° at 15° to 20° C. may still be pure. The addition of adulterants affects the rotation in such manner that lemon oil, orange oil, or distilled bergamot oil augment the rotation, while turpentine, cedar wood oil, fat oil, and spirit reduce it, and when large proportions of the first-named oil are present, lævo-rotation may be produced.

Solubility in Alcohol.—This test serves chiefly for detecting sparingly soluble admixtures—turpentine, cedar wood, gurgun balsam, or orange oil, fat oil—but with bergamot oil the solubility test is not much to be relied upon, except in the case of gross adulteration. Alcohol of 80 and 90 per cent. by volume is to be used. With pure bergamot oil half its volume of 90 per cent. alcohol is requisite to form a clear solution which is not made turbid by a further addition of the solvent.

Pure oil does not always dissolve completely in 80 per cent. alcohol. Samples with high amount of ester often give a turbid mixture, from which heavy drops are deposited. The reason for this is not understood, but it is probably to be found in the presence of waxy substances derived from the peel of the fruit.

Bergamot oil that is soluble in 80 per cent. alcohol may be regarded as free from any admixtures of fat oil, turpentine or orange oil. If it is not completely soluble the turbidity may be due to the presence of waxy bodies, as well as to adulteration. To determine that question the residue of evaporation must be examined.

Evaporation Residue.—Bergamot oil always contains some soli ingredients, part of which may be deposited in time as a semi-crystalline, smeary mass, consisting chiefly of bergaptine, $C_{11}H_5O_3(OCH_3)$. The portion remaining dissolved may be determined by evaporating the oil. The normal amount of residue is from five to six per cent. In cases of adulteration with turpentine, orange oil, or distilled bergamot oil the residue will be sensibly less than 5 or 6 per cent. The determination of residue is important, because the presence of fat oil having a high saponification number might otherwise lead to erroneous results.

Ester Determination. — The most important constituent of bergamot oil is the acetic ester of linalool, $C_{10}H_{17}OCH_3CO$, and its amount determines the value of the oil. That is influenced by conditions of season, etc., and a definite minimum cannot be fixed. Recently the amount has not on the average been more than 36 per cent., though it has formerly been from 33 to 40 per cent.

In applying the test a mixture of about 2 grammes of oil and 10 C.c. semi-normal alcoholic potash solution is heated for half an hour on a water bath in a flask fitted with reflux condenser: after cooling, water is added, some alcoholic phenolphthalein solution, and the free alkali titrated with semi-normal sulphuric acid. The reaction is as follows:—

$$\left.\begin{matrix} C_{10}H_{17}OCH_3CO \\ KOH \end{matrix}\right\} = \left\{\begin{matrix} C_{10}H_{17}OH \\ CH_3COOK \end{matrix}\right.$$

As the molecular weight of linalyl acetate is 196, the amount of ester is found by the formula—

$$x = \frac{19{\cdot}6.\frac{y}{2}}{g}$$

y representing the quantity of potash solution in cubic centimetres, and g the quantity of oil taken. Messrs. Schimmel state that the examination of a sample of bergamot oil at different times has not shown that there is any reason to believe that under ordinary conditions the amount of ether undergoes alteration.

II.—Lemon Oil.

Specific Gravity.—At 15° C. the normal variation is from 0·858 to 0·861. The most frequent adulterants, turpentine or orange oil, do not cause much alteration of specific gravity, but the determination is useful for detecting addition of alcohol.

Rotation.—This is of much greater importance; the normal variation is from +59° to +67°: oil ranging from +64° to +67° is produced only in certain districts.

Turpentine—the most frequent adulterant—is either lævo-rotatory or but slightly dextro-rotatory, so that its addition would reduce the rotation in any case, and proportionately to the amount added. This adulteration can be easily detected with the polariscope, but in making the experiment the great influence of temperature must be considered and, if necessary, allowed for. When a mixture of turpentine and orange oil, having nearly the same rotation as lemon oil, has been used there is more difficulty.

Pinene, boiling at 158° C., being the chief constituent of turpentine, while lemon oil contains only a small quantity of oil boiling below 175° C., lemon oil adulterated with turpentine will begin to boil at a low temperature, and in the fractional distillation of the first portion of distillate will consist chiefly of pinene. Perfect separation by repeated fractional distillation, however, is impracticable and unnecessary, because there are better methods of detection chemically and by means of the polariscope. The first distillate from true lemon oil has a lower rotation than the oil itself, but the difference is considerably less than that found when turpentine has been added as an adulterant.

The distillation is to be conducted in a Ladenburg flask with three bulbs. Operating with 50 C.c. of the oil and collecting the first 5 C.c. of distillate in a graduated tube, it is first shaken with some anhydrous sodium sulphate to remove water filtered into the tube (50 M.m. long) of a polarisation apparatus and examined.

The following examples will serve to show the application of this method:—

	Rotation. 100 M.m. at 20° C.	Specific gravity. At 15° C.
Lemon Oil	+61° 52′	0 8581
Orange Oil	+96° 23′	0·8507
Turpentine, French ...	−28° 24′	0·8977
„ American	+ 6° 2′	0·8766
Mixture A.		
71 Orange Oil.....	+60° 22′	0 8559
29 French Turpentine		
Mixture B.		
60 Orange Oil.	+60° 49′	0·8606
40 American Turpentine		

* Translated from the Bericht von Schimmel and Co., Leipzig, October, 1896.

	Rotation at 20° C.	Rotat'on of first 10 per c:nt.	Difference.
I. Lemon Oil	+61° 52′	+58° 55′	− 2° 57′
II. 90 Lemon Oil ..... 10 Mixture A	+61° 45′	+54° 28′	− 7° 17′
III. 90 Lemon Oil ..... 10 Mixture B	+61° 42′	+56° 52′	− 4° 50′
IV. 80 Lemon Oil ..... 20 Mixture A	+61° 26′	+49° 50′	−11° 36′
V. 80 Lemon Oil ..... 20 Mixture B	+61° 35′	+54° 14′	− 7° 21′

These figures show that the differences are large enough to admit of small quantities of turpentine being detected with certainty. The oil used in Experiment III. contained only 3 per cent. turpentine oil, but the difference between the oil itself and the first 10 per cent. of distillate is 7° 17′, while in the case of true lemon oil the difference is only 2° 57′.

Lemon oil being subject to alteration by keeping, the chief points to be observed for preventing deterioration are pointed out by Messrs. Schimmel to be exclusion of air and light. The drying of the oil with sodium sulphate is detrimental rather than useful.

Determination of Citral.—In reference to the method suggested by Mr. Garnett* for the examination of lemon oil, Messrs. Schimmel do not think that results are to be obtained sufficient for the purpose. Apparently it should be a very simple matter to ascertain the amount of citral, $C_{10}H_{16}O$, by converting that substance by reduction into the corresponding alcohol geraniol, $C_{10}H_{18}O$, then into an acetic ester and by subsequent saponification of this ester with semi-normal alkali. But in no instance can the alteration of citral be relied upon as taking place quantitatively in only one direction. Every reaction is accompanied by the formation of bye-products of resinification, such as methyl-heptenone, cymene, acetone, etc. That is also the case in the reduction of citral to geraniol, even when the operation is conducted in an acetic acid solution. Notwithstanding these theoretical considerations, the great importance of being able to determine the amount of citral in lemon oil induced Messrs. Schimmel to carry out a series of experiments to test the practicability of the method suggested by Garnett. Unfortunately, the results obtained showed such wide deviations from the known composition of the materials operated upon as to leave no hope of a useful application of the method.

The three essential constituents of lemon oil, terpene, citral, and citronellal,† were prepared in a state of purity, so as to make mixtures of known proportion for operating upon, as directed by Garnett, and by merely acetylating mixtures of limonene with citral or citronellal, or both. The results obtained, as shown below, did not give indications that would be of practical utility for the examination of lemon oil.

Mixture.	Acetylation. Per cent.	Garnett Method. Per cent.
I. Limonene with 10 p. c. citral.....	6·83	5·58
II. „ „ 5 p. c. citral..... 5 p. c. citronellal..	7·36	7·55
III. „ „ 5 p. c. citral.....	2 96	2 35
IV. „ „ 5 p. c. citronellal..	4 89	4·27
Lemon oil	7 46	5 90

By the action of acetic acid citronellal appears to be first converted into iso-pulegol,‡ which is afterwards acetylated, and the reaction may perhaps serve for the determination of citronellal, since iso-pulegol has the same formula ($C_{10}H_{18}O$) as citronellal. In the case of citral the reaction with acetic acid is less simple, and while there is always considerable resinification the saponification number varies according to the duration of the acetylating operation.

* *Pharm. Journ.*, lvi., 323.
† Döbner, *Archiv. fo. Pharm.*, 232, 688.
‡ Tiemann, *Berichte*, xxix., 913.

III.—Orange Oil.

Specific gravity at 15° C. from 0·848 to·852; but little altered by admixture of lemon oil or turpentine, but considerably by addition of alcohol.

Rotation.—On account of the large amount of limonene, orange oil has the highest rotation of any essential oil. All adulterants reduce the rotation, and the polariscope at once indicates the presence of admixtures. The normal rotation is from 96° to 98° at 20° C. Temperature influences the rotation of orange oil still more than it does lemon oil, and in order to obtain comparable data a reduction of observed data made at a higher temperature than 20° C. is indispensable.

Distillation Method.—To ascertain whether orange oil contains an admixture of turpentine or lemon oil a considerable quantity must be operated upon by repeated fractional distillation. In the first fraction the pinene of turpentine can be detected, either by its much lower boiling point or by its being lævo-rotatory when French turpentine has been used, or but feebly dextro-rotatory when American turpentine has been used. If these tests are insufficient, the nitrosochloride compound must be prepared, and from that the characteristic bases pinene-nitrol-benzylamine or pinene-nitrol-piperidine.

The solubility test is inapplicable in the case of orange oil or lemon oil.

IV.—Lavender Oil.

Specific gravity varies between 0·883 and 0·895 at 15° C. It is lowered by addition of alcohol or turpentine, and raised by spike oil or cedar wood oil.

Rotation.—Deviation to the left; generally from 4° to 8°. Of the most frequent adulterants, French turpentine or cedar wood oil increases the deviation, while spike oil lessens it.

Solubility in about three volumes of 70 per cent. alcohol is characteristic, and addition of a further quantity of the solvent should not cause turbidity. Addition of turpentine or cedar wood oil renders the oil less soluble, but spike oil has no influence.

Amount of Ester.—Lavender oil consisting largely of linalyl acetate, sometimes to the extent of 40 per cent., together with minute proportions of geranyl acetate, the determination of the amount of ester is the best practical test of quality. For that purpose a mixture of about 2 grammes of the oil with 10 C.c. alcoholic semi-normal potash solution is heated on the water bath for half an hour in a tube fitted with a reflux condenser, and the titration carried out as in the case of bergamot oil. The reaction is represented by the equation—

$$\left.\begin{matrix} C_{10}H_{17}OCH_3CO \\ KOH \end{matrix}\right\} = \left\{\begin{matrix} C_{10}H_{17}OH \\ CH_3COOK \end{matrix}\right.$$

the amount of ester is calculated from the result obtained, in the same manner as in the case of bergamot oil.

Good lavender oil should contain not less than 30 per cent. of linalyl acetate.

V.—Star Anise Oil.

Determination of the solidifying point is recommended as the best test of the quality of this oil, and the best indication of the amount of anethol. As the result of numerous trials, the average solidifying point has been found +16° C., the highest limit being 17°·5, and the lowest for genuine oil, 14°. In making the test the oil should be cooled to +5°, and then made to crystallise by rubbing the thermometer bulb against the side of the tube. The point at which the mercury ceases to rise is taken as the solidifying point.

SOME OLD CURIOSITIES.

BY HAROLD E. MATTHEWS.

A little book,* published in 1724, treating of drugs and chemical preparations, has lately come into my hands. It contains descriptions, many of them very careful and accurate, of articles of Materia Medica then in common use, and gives an account of their sources. To the student at the end of the nineteenth century some of these may seem very strange and curious.

That Adeps Hominis could ever have been part of the ordinary stock of a druggist's shop seems incredible; but this is what the writer observes concerning it. "The fat of man," he says, "is gathered from those parts of men, as suet is made of other creatures and hog's lard of hogs, of which the sweetest and cleanest is to be preferred."

Of Cranium Humanum, which was mentioned in the first editions of 'Pharmacopœia Londinensis,' he observes:—"The scull of a man ought to be of such an one which dieth a violent death and never buried; therefore those of Ireland are here best esteemed, being very clean and white, and often covered over with moss." Those Irish battle-fields, where, five and thirty years before, the last blows had been struck for the ill-starred James, doubtless furnished ample supplies of this gruesome drug.

Animal substance medication, though on different principles to that of to-day, was prevalent apparently a hundred and seventy years ago. What virtues could have been supposed to lurk in Cornu Rhinocerotis or Cornu Unicornis the writer does not mention, but speaking of the latter he attempts to correct a popular error. "Unicorn's horns," he says, "are not of a four-legged creature like to a horse, but come from a fish, and therefore a sea unicorn."

Venice seems to have supplied the market with two preparations of reptiles—Scinci Marini and Trochisci de Viperis. The former are described as being "creatures with four legs, head and a tail, like to an eft." "They swim in ponds," he adds "and feed upon odoriferous herbs. They are sent over dried up, and salted." Trochisci de Viperis consisted of "little round cakes, made and sealed with the mucilage of the powder of vipers, and beaten biskets (*sic*), and dried in the sun."

Among the Arachnida come Scorpiones Terrestres, "a kind of a venomous worm or insect, much resembling a cray-fish, with his tail having a sharp sting bended like a claw. They are sometimes brought over from Germany alive, otherwise they are dried. The largest are best, but the live ones are reckoned far better."

In how many pharmacies, I wonder, could genuine "crabs' eyes" be found nowadays? Under the designation of Oculi Cancrorum the writer comments upon them as follows:—"Crabs' eyes (improperly so called for they have none), but cray-fish eyes (in the German *crebtz*) of which there are some of a large bigness, as big as the Chester lobsters, which have every one two stones or crabs' eyes in the forepart of the head, even beyond their eyes. "In Silesia they have vast quantities, insomuch that the servants do condition but to eat so many times in a week."

The grammar is somewhat contorted. It would be interesting to know if the bird which the author calls "Aster" is known to modern ornithologists. Speaking of it, he remarks that "its scent is said to be so strong that fishes are drawn by it as he is flying over the river, and so taken up by him, having one leg like a hawk, the other like a duck." "Oleum latericum, drawn from brick-bats chymically by retort" must be the original of the "oil of brick" still inquired for in country places.

The origin and nature of cochineal—or cochinille, as he has it—seems to have puzzled the old writer somewhat. "Cochinille," he says, "is a fine little berry breaking in a dark red powder, grayish coloured without, in shape like that insect called lady-bird, but something less, and therefore by many believed to be a fly (or an insect), which cannot be, that any such rich colour can be in any such creature. The truest account I ever could learn is that some flies and insects fastening upon the leaves which are sharp as needles) of a certain shrub on which your West Indian shoak-bears do grow, causes a kind of a blister, turning very red at first and grayish the outside. After the Indians do rub all the other parts of the leaf when dry, and thus the cochinille is produced. Others think it only the blossom of a tender herb, taken off before it flowers."

The employment of cowhage as a vermifuge seems to have been unknown in 1724. Under the heading of "Cow-itch," the writer remarks that it is "so called because of its provoking itching and scratching," and it "is of no other use but to play tricks and waggery with." From which it would appear that the practical joke, which every druggist's apprentice fondly imagines to be his own original idea, has long prevailed as a most commonplace expression of mischievous wit.

* "The Treasury of Drugs Unlock'd, or a Full and True Defcription of all Sorts of Drugs, and Chymical Preparations fold by Druggists. Whereby you may know the Place of their Growth, and from whence they come, and how to diftinguish the Good from the Bad. Very USEFUL for all Gentlemen, Merchants, Druggists, Doctors, Apothecaries, Chirurgeons, and their Apprentices. As alfo for all Travellers, Seamen, Cuftom-houfe Officers, and all others that either Traffick in them, or make any Ufe of them, or thofe that import or deliver any of them at the Water-fide. Giving a true Account of all thofe that are Prohibited, and thofe that are not, whereby many needlefs Difputes and Law Suits may be prevented. The whole Work Alphabetically digefted. With a compleat Catalogue of all Drugs, &c. By *Jo. Jacob Berlu of London*, Merchant in Drugs. The Second Edition, With Additions. London: Printed for S. CLARKE, the Corner of *Exchange Alley*, next *Birchen Lane*. 1724." The first edition of this book, a copy of which may be seen in the Pharmaceutical Society's Library, at 17, Bloomsbury Square, was published in 1690, at the price of one shilling. It was "Printed for *John Harris* at the *Harrow* againft the Church in the *Poultrey*, and *Tho. Howkins* in *George-Yard*, in *Lombard-ftreet*." [Ed. *Pharm. Journ.*]

BOTANIC GARDENS OF THE WORLD.

II.—LONDON PUBLIC PHYSIC GARDENS, CHELSEA.

(*Continued from page* 342.)

Of the gardeners of Chelsea Garden, Philip Miller, gardener 1722–1771, and Forsyth, gardener 1771–1784, call for special mention. Philip Miller succeeded his father as gardener at Chelsea, and there cultivated with great skill fine exotics and rare indigenous plants, earning for himself the title of "Hortulanorum Princeps.' A member of the Botanical Academy of Florence, he was elected to the Council of the Royal Society, and contributed several short articles to its *Transactions*. He succeeded at raising at Chelsea several hard-shelled fruits and seeds, *e.g.*, the cocoa-nut, the bonduc or nickar tree (*Guilandina bonduc*, Lin.), *Abrus precatorius*, the horse-eye bean, by causing the seeds to be placed in a bark bed to germinate, and then transplanting them into earth. He also gave an *Account of Bulbous Roots Flowering in Bottles Filled with Water*, a method of growing early hyacinths, tulips, and narcissus which was then quite new. In 1730 Miller published anonymously *A Catalogue of Trees, Shrubs, and Flowers which are hardy enough to bear the cold of our climate and the open air, and are propagated near London*. This thin folio contains coloured plates of trees and shrubs arranged in alphabetical order, together with their generic characters. In the same year he issued a catalogue of the officinal plants grown in the Chelsea Garden: *Calalogus Plantarum Officinalium quae in Horto Botanico Chelseiano aluntur*. In the course of the next year he published

his 'Gardener's Dictionary,' which was translated into French, Dutch, and German, and earned from Linnæus the encomium: "Non erit Lexicon Hortulanorum sed Botanicorum." It is most interesting to the modern botanist as containing the early experiments in the fertilisation of plants which Miller communicated to Blair and Bradley: "I set twelve tulips by themselves, about six or seven yards from any other, and as soon as they blew, I took out the stamina with their summits so very carefully that I scattered none of the male dust; and about two days afterwards I saw bees working on a bed of tulips, where I did not take out the stamina, and when they came out they were loaded with the farina or male dust on their bodies and legs, and I saw them fly into the tulips, where I had taken out the stamina, and when they came out I found they had left behind them sufficient to impregnate these flowers, for they bore good ripe seed which afterwards grew. I separated the male plants of a bed of spinach from the female, and the consequence was that the seed did swell to the usual bigness, but when sown it did not grow afterwards, and searching into the seed, I found it wanted the *Punctum vitæ*, the embryo or what Geoffroy calls the Germen." There is also another very interesting passage. In his 'Section on the Generation of Plants,' Miller writes in the 'Dictionary':—"As to the manner whereby the Farina fecundifies, Geoffroy advance two Opinions: First, that the Farina always being found of a sulphureous Composition, and full of subtil and penetrating Parts [as appears from its sprightly Odour] falling on the Pistils of the Flowers, there resolves, and the subtelest Parts of it penetrating the Substance of the Pistil, excite a Fermentation, which putting latent Juices of the young Fruit in motion, occasions the Parts to unfold the young Plant that is enclosed in the Embryo of the Seed. In this Hypothesis, the Plant in Miniature is supposed to be contained in the Seed and to want only a proper juice to unfold its Parts and make them grow. The second opinion is that the Farina of the male Plant is the first Germ or Semen of the new Plant, and stands in need of nothing to enable it to grow or unfold but a suitable Nidus with the Juice it finds prepared in the Embryo of the Seed. Geoffroy rather makes the proper seed to be in the Farina, inasmuch as the best Microscopes do not discover the least Appearance of any Bud in the little Embryos of the Grains when they are examined before the Apices have shed their Dust." The second view here given is substantially that of Morland, and we have here an illustration of the ignorance obtaining before the researches of Koelreuter and Sprengel as to the mode in which fertilisation of the ovule occurs. Some of Miller's experiments and investigations were communicated to the Royal Society by Patrick Blair, who gained considerable reputation in England by passing off the researches of Camerarius as his own. Number 369 of the *Phil. Trans.* is entitled: *Observations on the Generation of Plants. An Experiment by Mr. Philip Miller, who on Separating the Male Spinach from the Female found that the seeds ripened, but on being sown did not vegetate. Instances of Hybrid Productions among Savoy and other Cabbage Plants. Observations on Variegations in Plants; On the Impregnation of Flowers by the Bees and other Insects carrying the Farina from Flower to Flower.* In 1731 Miller published *The Gardener's Kalender*, to which in a subsequent edition he prefixed *A Short Introduction to the Knowledge of the Science of Botany*, explaining the use of Linnean terms, and illustrated by copper plates exhibiting the characters of the classes. Miller carried on correspondence with persons interested in botany and horticulture nearly all over the world. For his own garden and for the Physic Garden he received new and rare species from the Cape of Good Hope, Siberia, North America, and the West Indies. He was thus enabled to execute his *Figures Adapted to the Gardener's Dictionary*, which he began to issue in numbers in 1755, and which contained three hundred tables. Each number was accompanied by several pages of letterpress, containing the descriptions of the plants, illustrated, and an account of their respective classes according to the systems of Ray, Tournefort, and Linnæus. On his death, in 1771, he left behind him a very large herbarium of exotics, for the most part grown in the Chelsea Physic Garden.

Under the direction of Philip Miller, Joseph Banks began the botanical researches which have made his name famous. His mother lived at Chelsea close to the gardens, to which he afterwards became a frequent contributor, sending them more than five hundred varieties of seeds collected during his voyages round the world. Banks' important botanical library and collections passed at his death to the British Museum.

Another botanist who found the neighbourhood of Chelsea Gardens of great service was Mrs. Elizabeth Blackwell. Having heard that a herbal of medicinal plants was much wanted, she showed Sloane and Dr. Meade some specimens of plants she had painted, with which they were greatly pleased. Isaac Rand was Demonstrator at Chelsea, and Philip Meller gardener at the time. They advised her to take up her abode near the gardens, in order that she might constantly have fresh specimens before her. After she had completed the drawings she engraved them herself in copper and coloured them by hand. The first volume of her herbal was published in 1737, with a recommendation from Rand, Dr. Sherard, Dr. Meade, and others. The College of Physicians also gave her a testimonial with leave to prefix it to her book. The prepartion of the second volume took her two years, the whole being issued in 1739 under the following title: *A curious Herbal, containing* 500 *cuts of the most useful Plants which are now used in the practice of Physic, engraved on folio copper plates after drawings taken from the life. By Elizabeth Blackwell. To which is added a short Description of the Plants and their common Uses in Physic*, 1739. The engraved page accompanying each plate was the work of her husband, a doctor, and author of a treatise on agriculture, whose interference in politics in Sweden, where he had taken up his residence, led to his execution in her lifetime. In these pages the Latin and English officinal names of the plants are followed by a short description and a summary of its qualities and uses. Then the names in various other languages follow. This work of Mrs. Blackwell suggested the well-known work of Trew, in which her plates were copied and supplemented by drawings of omitted plants and plants newly introduced into practice.

It has been said that to enter into detail into the systems of arrangement pursued at Chelsea Garden would involve giving a history of English botany. We have seen that Gerard and Parkinson pursued a classification partly dependent on medicinal virtues, partly on the place of growth, and partly on the habit of the plant, leading to much confusion and the grouping together of plants because of very superficial resemblances. Robert Morison, 1620–1683, renewed at Oxford the classification of plants on a comprehensive scale, though his system of arrangement being founded exclusively on the form of the fruit, which he calls the seed, led to his bringing together very different forms. His system never had many adherents. The system of John Ray, 1628–1705, which did much more justice to natural affinities, was at first followed by Philip Miller. Though he did not accurately separate Monocotyledons and Dicotyledons, he recognised that the arrangement of the leaves in the embryo should form a basis of classification, and established several natural groups, but his system was very faulty in its subordination and co-ordination. 'Ray's chief merit is that he to some extent recognised natural

affinities in their broader features; the systematic separation of the smaller groups was but little advanced by him." His system was practically supplanted in England by that of Tournefort, which was thoroughly artificial. He did not follow the division into Phanerogams and Cryptogams established by Ray, nor the division of woody plants and herbs into Monocotyledons and Dicotyledons, but was possessed by a rigorous spirit of system. In adopting the binary nomenclature, he provided his genera with names and characters, and is often though erroneously considered as the founder of genera in the vegetable kingdom. After the visit of Linnæus to Chelsea in 1736, his system was adopted in the physic garden till it was supplanted by that of De Candolle, founded on the number, union, and grouping of the stamens and carpels.

ON "PATENT" MEDICINES.*

BY MORTON SMALE, M.R.C.S.ENG.

I shall venture to make a few remarks on the subject of so-called "patent" medicines, and if the public care to listen, I do not think they are likely to hear anything very complimentary either to themselves or the patent nostrums, the sale of which they so extensively promote.

In using the term "patent medicine" I do not refer to preparations which are made for the use of the medical profession, the manipulation of which require special processes which may be patented by letters patent; the use of these is a matter which lies alone with the profession, and the fact of their being patented reveals to the public and the profession all the knowledge that is required for their application with safety and benefit to the patient.

The Government Stamp.

These, however, constitute but a small portion of the preparations that are offered to the public requiring the Government stamp. The popular notion of a patent medicine embraces all such preparations as have a Government stamp affixed thereto, but nearly all of them are merely proprietary medicines. The following is the true description of these precious articles of commerce. A preparation, to be liable to stamp duty, must be one which is to "be used or applied internally or externally as a medicine or medicament for the prevention, cure, or relief of a disorder or complaint incident to or in any wise affecting the human body." Then it must also be brought under one of the following six clauses which constitute liability to duty. (1) "The seller must have a claim to have an occult secret or art for making or preparing"; (2) an exclusive right or title to making or preparing"; (3) it must have been patented"; (4) "it must be or must have been recommended to the public as a nostrum or proprietary medicine"; (5) "as a specific," or (6) "as beneficial for the prevention, cure, or relief of any disease."

Any one of these conditions alone entails liability to stamp duty. It will be evident, therefore, that although a patent medicine must have a stamp the patent is not a necessary condition.

The condition is, that it must be or must have been recommended to the public as a proprietary medicine, or as a specific, or as having a secret—it may be an occult one—attached to its preparation. One of the peculiarities to be observed here is that it has to be recommended to the public, but by whom is it to be so recommended the conditions are dumb.

The Makers of "Patent" Medicines.

The person or persons who recommend—to this I call particular attention—may be entirely ignorant, not only of the specifics or cures which they prescribe in a wholesale manner, and of the nature, or source, or course, or sequelæ of the diseases which are to be prevented or cured, but are also utterly ignorant of the complex human tenement which carries the disease. Whatever else their knowledge may be, whether it be limited to the laws of profit and loss and a good balance sheet, or to the glorious mendacity and effrontery of quack advertisements, or whether it includes in its grasp all that has been taught of anatomy and physiology, and all that has ever been or can be known of medicine and surgery and the action of drugs, we may rest assured they can never know the circumstances surrounding the sufferer, or anything of the mental or physical conditions accompanying the disease for which the specific or cure is sold.

Thus, gentlemen, while the members of the medical profession may not possess a secret anything which would in any way benefit suffering humanity, and while the unqualified assistant may not (rightly, I think) act but under the strictest surveillance, the humbug may distribute his wares broadcast, fortified by all the glory of a Government stamp. I say fortified, advisedly, for we all know the spurious value which is attached—not only by the so-called ignorant classes, but by many who might be expected to know better—to the revenue label.

Mr. Alpe, of the Inland Revenue Department, in his book on the Medicine Stamp Duty, says: "Another objection urged against the duty was that ignorant persons regarded the Government stamp as a guarantee of purity. The stamp is still held out by the makers of medicine who have paid for the privilege of having their stamps printed from an appropriated plate, as a guarantee that the medicine which it covers is genuine, in the sense that it is really made by them. In this respect the stamp answers the purpose of a trade mark of a superior kind; for whereas the counterfeiting of a trade mark is only a misdemeanour, and the owner of the trade mark would probably be put to considerable expense to punish the counterfeiter, the counterfeiting of a revenue stamp is felony, and the prosecution would be conducted for the protection of the revenue at the cost of the Crown." This is sufficient reason for the caution still occasionally given to the purchaser, to see that the name of J. Smith is printed upon the stamp, "without which none is genuine and to imitate which is felony." Such intimations may have impressed a great many persons with an idea that the medicine so carefully protected must necessarily possess unusual beneficial properties, and to remove the possibility of such an apprehension, every stamp issued since 1885 bears its own statement in legible letters that this stamp "involves no Government guarantee." I think you will all agree with me in arriving at the conclusion that the ordinary members of the public are quite unable to appreciate the value of these two statements, which must necessarily appear to them to be of a contradictory character.

The Consumers.

When we turn from the maker or distributor to the consumer, the position is even more deplorable, and were it not for its serious aspect, might be termed ridiculous. Every advanced medical student and every medical practitioner knows the difficulties attending diagnosis and prognosis. It may be too much to ask any but the specially trained to appreciate the importance of the latter in indicating treatment; but to the most ignorant, or what is perhaps worse, the most prejudiced minds, the desirability of a correct diagnosis for successful treatment must be obvious. Yet this very first essential principle in the intelligent treatment of disease, beset as it is with difficulties to the most experienced, every user of a proprietary medicine assumes and discharges towards himself, and not only to himself, but with the assurance of ignorance, frequently towards others.

* From the Inaugural Address to the students at St. Mary's Hospital, Paddington, delivered October 1.

As to the unimaginative rustic—

A primrose by the river brim
A yellow primrose is to him
And it is nothing more.

So to the amateur patent medicine prescriber. A cough to him is a cough and nothing more. How much more it is or how much more it may become enters not into his calculations. Yet in the face of this the medical profession is frequently reproached for its powerlessness to check certain diseases which may have been, and indeed often are, fostered by the blind faith of the sufferer in some Government-stamped nostrum or "cure all" with an enticing name.

"The man who is his own lawyer has a fool for a client," says the proverb; may this not also be applied to the man who is his own doctor, although the evidence in the one case may not to the uninitiated be so obvious as in the other? That they are fools is clear from a perusal of the testimonials in advertisements, which are by experience found to carry conviction and to secure fresh dupes to the vaunted specific.

Saline Drenching and its Results.

The common talk amongst the public about new diseases, which to the medical man are but old enemies intensified in some instances by the changed condition of modern life, seems to point a moral. May not the enormous increase in the indiscriminate consumption of proprietary drugs, recommended only by interested and unscrupulous concoctors, have some influence in the matter; or again, may not the serious and increasing calls made upon the resources of abdominal surgery and the numerous intestinal troubles requiring medical treatment, be in some measure due to the prevailing fashion of saline drenching so continually resorted to by self-constituted doctors for the sake of the immediate and transitory relief which they afford? Or it may be so reducing the tone of the various organs and tissues of the body that they readily yield themselves victims to the attack of any disease germ that may find its way into the system.

Every Man His Own Doctor.

Education may be divided into two sections, one general, and the other special; the former, beginning at the earliest stage of mental development, first cultivates the power of acquiring and retaining knowledge, then of classifying and utilising it, and then of imparting it to others. A good general education should prevent, and at all events will retard, the inevitable narrowing influence of the special one. It is through a special education that the vast majority of people are more or less fitted for taking an active part in life and for earning their daily bread. This special training must necessarily be in one direction, and just as its objects are kept in view and the power which it gives is discreetly applied, so, other things being equal, will be the success of its application. If a man apply his special knowledge in a direction opposite to that for which it is adapted, he is most certain to come to failure, very likely to do harm. If he allow a cultivated intellect or an active imagination innocent of technical knowledge to carry him into the region of exact science, or to handle subjects which science seeks to control, the results are very likely to be unsatisfactory. I make these remarks in view of a recent article in one of the morning newspapers, where it was stated that the advance of education enabled people generally to treat for themselves many of the minor complaints for which at one time the doctor would have been called in. Now, I know that the advance in medical and surgical knowledge has rendered necessary the addition of one year to the period of study required of the medical student. I also know that the demands made upon individual acquirements in other walks of life, both professional and commercial, have been felt as a terrible burden both by the student and by those who have to pay for them. But how all this can have qualified people to treat minor medical complaints is beyond comprehension. The medical student has to study one year longer to meet the exigencies of his calling; it is therefore evident that the advance of education has not simplified or lessened his difficulties. It may be and is no doubt the case that these extra demands are made in other professions, and that under the stress of competition they are extended to commercial pursuits, but let me ask if the additional year requisitioned from the time of the medical student qualifies him in any way for being his own lawyer, or architect, or even his own doctor?

Effect of Education on Patients.

Going back to the influence of advanced general education, if it has, as it ought to have done, stimulated the intelligence in a healthy manner, it will have enabled the individual to recognise and appreciate the difficulties of the professional man and make him wary of attempting to interfere in matters of the import of which he can only have a glimmering perception.

Moreover, if by stimulating the intelligence is meant stimulating the imagination, I would suggest that the stimulating of this faculty is more likely to promote minor troubles than to impart the power of treating them successfully. But false economy may be an outcome of advanced education, for education and sound judgment are not synonymous terms. False economy, I fear, is the real advanced education which prompts people to treat minor complaints themselves for which the doctor would at one time have been called in.

The beginning of an illness and the convalescent periods are the times of trouble for the doctor. When the patient is prostrate and quiescent and the terrible anxiety of uncertainty and helplessness possesses the friends, then the doctor is master of the situation; he can map out the course of the disease which has declared itself, and his treatment is supported and carried out by all the promptings of love, or it may be selfishness. But in the beginning his real opportunity is frequently lost. The advanced education has delayed rather than—as it should have done—hastened the advent of the doctor, and his too frequent remark, "Why did you not send for me sooner?" or "I wish I had seen the case earlier," is received with incredulity and not infrequently with derision—and the small beginning, which is the general order of even the greatest things, is set at naught—so advanced has education become. Again, in convalescence the anxious care and solicitude of the medical attendant are too often taken as so many efforts to prolong his control over the patient, or to magnify the importance of his office and the amount of his fees. The intelligence stimulated by education has become morbidly clever. The disheartened and sometimes disgraced medical attendant alone knows the seeds of future trouble which have been sown by preliminary treatment or by disregard of his advice—trouble that will arise in due course as surely as day and night follow each other.

The True Inwardness of Patent Medicines.

We do not by any means wish to draw a false or alarming picture of the effects of what we may call the preliminary treatment of patients, or of these so-called nostrums; there is nothing to be gained by wilful exaggeration, and to my mind the monetary aspect of the question, although demanding attention and being most astonishing in its magnitude, is the smallest part of the evil. It may surprise many outside of our profession to know that the compositions of all these vaunted proprietary medicines are well known to the medical profession, that their component parts are common property, and that while many of them are nearly entirely innocent of medicinal qualities, others are combinations of drugs in use in daily practice more or less poisonous in character; the real difference being, as already stated, they are prescribed on the one hand by trained, skilled, and qualified men for each individual case,

after careful and painstaking investigation and diagnosis. Moreover they are combined and modified according to the necessity of the patient. On the other, they are administered indiscriminately in fixed quantities, the consumer being the sole arbiter of the necessities of the case. It is also well known that the more immediate action of many of the preparations is due to the use of a larger dose of some active or leading ingredient than is prescribed or advised by the British Pharmacopœia, or than is justified by the united experience of the medical profession after many years of observation, or than is considered consistent with genuine safety.

This much, however, cannot be said of all the so-called patent medicines, and of all preliminary treatment of minor complaints; if the medical man dare speak, and if there were the slightest likelihood of his being believed if he did speak, he could tell of conclusions which in a measure would justify the incredulity of the uninitiated, however free it might be from justifying disbelief in the veracity of the medical man. The baneful presence of transmitted disease, so well known to us all, is in many instances not more apparent than the influence of specific drugs in the growth and development of children, and in their more advanced life every observant practitioner of my own specialty must frequently see instances where the duty-stamped drug has left its indelible mark.

The Patent Medicine Bill.

This is not a very cheerful indictment to bring against the British public and against the Governments which countenance such a state of things; for the public it may be urged that money is saved, and that convenience is met by the sale of such preparations, and for the Government that it enjoys a substantial addition to the exchequer from the stamp duty.

In reply, it may be urged that public convenience, which is greatly a matter of habit, might be met in other ways, and that although the tax of £250,000, which the patent drug consumers lay upon themselves, may help the revenue, it says but little for the economical instincts of that portion of the public—we keep reason on their part out of the question.

In the year 1880, the medicine stamp duty yielded £135,366; ten years later, in 1890, its yield reached £217,264. So that in the present year of "educational enlightenment," which gives "power over minor diseases," we may take it that the returns are over a quarter of a million from the medicine stamp duty alone. The rates of duty vary from 1½*d.* in a packet not exceeding 1*s.* in value, to 20*s.* on a package over 50*s.* in value, and the vendors of dutiable medicines have to pay 5*s.* yearly for a licence.

If we take the duty at 10 per cent. all round, a very low estimate, we shall find that the amount of money spent on stamped medicines bought and used by the public—in the majority of cases for they know not what—amounts to something like £2,500,000 per annum. Much has been said about the drink bill of the country, but in the consumption of excisable liquors the consumer generally knows what he is paying for and is able to form some opinion as to its merits. I would urge my hearers, nevertheless, to be very moderate in their use of them.

The Quack and His Dupes.

This enormous sum is annually spent by the intelligent British public, which imagines it is doing a smart thing when it listens to and is guided by the quack as against the medical man; but then the quack, with his plausible platitudes, pretends to bring the mysteries of scientific medicine to the level of the uninstructed (speaking professionally), while persuading his victims that he is raising their knowledge to the level of that possessed by those who have devoted their lives to the study and alleviation of disease, and who have patiently worshipped at the shrines of Nature and of science; he panders to the worst traits in man's character—his self-conceit, his superstition, and his blind faith in those who claim to be able to perform miracles. Much of the so-called success of the quack is no doubt due to the natural impatience of suffering, especially when accompanied by credulity and incapacity. The doctor who cannot in a few weeks or months cure the malady which has been for years gaining its ascendancy, and which may have been materially helped on by the ubiquitous patent medicine perseveringly applied to symptoms, under the assumption that treating symptoms and treating disease are the same thing, is called an impotent pretender and dismissed. Perhaps if the doctor were in many such cases less reticent, and were he to tell the patients a few plain truths, it might be better for both parties; but the British public, which provides customers for the patent medicine man, also provides juries for the law courts, and so can prescribe penalties as easily as it recommends quack medicines. I fear that the same public that can spend its millions on quack medicines and yet begrudge the doctor his fair remuneration, and goes out of its way by organising clubs, societies, associations, and working through co-operative stores and such-like arrangements, to buy his skill as cheaply as possible, are not much to be trusted in the consideration of medical ethics, and so the medical man finds his safety in silence; for even when he tries to explain some of the subtleties underlying diseases, his explanation is misunderstood, misquoted, and strange and fantastic stories repeated as to what he has said.

To help us to realise how enormous is the traffic in patent medicines, I am able to assure you that the largest customer of the Post Office is an insurance company; the next largest is the proprietors of a patent medicine. If by any chance there should happen to be any relationship between those who take so-called patent medicines and this insurance company, it might be a good thing for the surviving relatives of the patent medicine imbiber.

It may be that the public are like the Irishman quoted in Le Fanu's 'Seventy Years of Irish Life,' who said he never called in a doctor because he wished to die a natural death. We may feel content that the man who possessed wit enough to say that had wisdom enough not to take patent medicines.

The Remedy.

Having so far tried to comply with the requirements of the press, and pointed out as strongly as possible a matter that may be called a grave and serious scandal, it seems incumbent upon me to suggest some remedies for the state of things I have laid bare.

This, perhaps, is neither the time nor the place to do so, nevertheless I would urge that the Government stamp should be abolished, and the present seems to be an opportune moment for abolishing it when the revenue of the country is so largely augmented by the recently established "death duties"; and although this would not at once either reduce the number of proprietary medicines, or abolish the disgraceful and discreditable advertisements that disfigure our lovely country, and infest every periodical that reaches our hand, I am convinced that very shortly it would do so, so sure am I that it is the Government stamp that attracts and enhances the value of so-called medicine in the eyes of the public.

One other suggestion is that drugs should only be supplied to the public by pharmaceutical chemists, and that no combination of them should be compounded or sold by any but a qualified chemist, and then only with a doctor's prescription.

If some practical philanthropist (let us say Sir John Lubbock) could be convinced of the harm that is yearly being done by these nostrums he could frame and introduce a Bill into the House of Commons that would confer a benefit upon his countrymen by restricting very largely—if not abolishing altogether—the opportunities which the laity now possess for self-medical treatment.

HOW TO ARRIVE AT DISPENSING CHARGES.*

BY R. DARTON GIBBS, PH. C.

Some apology is needed for selecting a very controversial subject, and introducing views that come from one who is not actually engaged in dispensing. The bold, decisive title of my paper may have caused some wonder how I should deal with such a subject, and whether I had got a formula ready that would settle the variations that have for so long troubled the conscientious pharmacist, and that henceforth the public who pay, the doctor who may criticise, the proprietor who accepts the responsibility, or the assistant who may actually dispense shall all agree?

I will first examine the subject from three distinct systems of charges. First, the medical; second, the pharmaceutical; and third, the general.

Take the medical, based upon "ability to pay." This is not confined to medicine, there are others who can take this privilege, viz., the tax gatherer who taxes your income, and the water company who charges you for water, not upon what you consume, but upon the value of the house. The medical man can by law—which is the most important consideration—recover twice as much from "B" as from "A," and three times as much from "C," depending upon the value of the houses "A," "B," and "C" live in.

Now you will agree with me that this system cannot be applied to dispensing. Medical fees grew up in an age of privilege, or I question whether this system would have developed. It is based upon what I shall call an erroneous idea that all the members of the profession are of equal skill and have an equal right to fees which custom established and law recognised. I am not addressing medical students, or I should warn them that sooner or later medical fees will conform to economic principles. To suggest, therefore, that dispensing charges should follow medicine would involve agreement, which you know is impossible, then custom, and finally legal recognition, but even if you had got to this it would have been working backwards, carrying you to a system of privilege happily dying out.

I come now to the second system of charges, which is one you are familiar with in dispensing, viz., "Dose."

I regret I am unable to present this system backed by reasons that would commend it. That there were reasons, and at the time very good ones, for basing the price of physic on the dose, I have not the least doubt now. But my position is this, I have never been fortunate enough to meet anyone who could defend to his own satisfaction the wisdom of basing on dose, and yet it exists. Was it that in earlier times when the arts and mysteries of physic were more profound, when physic was a price per draught, when medicine bottles as we know them to-day were not in existence, and when the price was less considered, that it was wise and best to charge for "services rendered" at a price per dose? These are matters that can be better dealt with by the historian. My intention is to start from the fact and give it some criticism. I must deal with the question of fact. It is quite open for anyone to say that dispensing charges are not based upon dose, that an examination of a dispensing list discloses every possible variation, and that nowhere does it say "charge at per dose." I am therefore compelled to read between the lines. Well, now, whatever it is based on it is not materials, for they are not mentioned, and the only other thing is labour, and that is not charged for, because if a mixture varies in the dose the price becomes altered, whereas the dose being constant any variation in the labour does not affect it, and, lastly, if the price of a given number of doses is divided by that number the result is fairly constant, that I am justified in saying dispensing charges are based on dose.

Now I want to inquire on what grounds a patient is called upon to pay a price per dose regardless of the materials used or the services rendered. What position can a pharmacist claim to hold that he has a right to the pocket of another? It seems to me you can hardly expect a development, to use no stronger term, so long as you leave the above items out of consideration. Then, see what you lay yourselves open to in the way of criticism. Letters in the daily press, which no one satisfactorily answers. "A" writes to say he took a prescription containing bicarb. soda and inf. gentian, and was charged 1*s.* 9*d.*; he reckons the ingredients were worth 2*d.* "B" writes to say he was charged 9*d.*, 1*s.*, and 1*s.* 6*d.* for the same mixture, and so on. Well, you need not be afraid of criticism so long as you can knock the wind out of your opponent, but it is a very difficult thing to explain why a simple mixture that anyone with a few weeks of experience could take in hand, should be an equal price with one requiring skill, or should be four times the price of a box of pills, which requires ability, special apparatus, and four times the labour to produce. It reminds you that at certain shops, if you buy a 30*s.* suit of clothes, you are presented with a gold watch, and it appears to me that the pills stand in the same relation, the disadvantage being apart from the confusion that you are liable to be called up in the night for the gold watch.

Well, now you see I am not a defender of the dose system, and I say, in the interest of my craft, you will do well to shake it off; it pleases no one, and in the aggregate it leaves a poor result.

I now come to a consideration of the subject of the general system of making charges, and with your permission I will discuss the subject, making notes on the way in order to make myself clear.

When a man makes up his mind to construct, it does not very much matter what, he can—and it is very usual to do so, although by no means necessary—look upon the cost as being, broadly, materials and labour, but he has no sooner entered upon his work than he finds it very difficult to know which is which. For instance, his material may be in London or anywhere except "on the ground"; and there is carriage. Does that go on to labour or materials? As a cost-clerk you would be expected to know, but what I want you to notice is that cost of material is almost entirely labour. Things that you buy for your business you call raw material, and you construction, finished goods, but your raw material was the finished goods of the previous maker, and so it works back to the material nature provided, or it works on by successions of labour until it disappears by what is called consumption or its lifetime.

Having dealt with carriage, there are many other costs which have to be considered. Materials have to be checked by measuring, counting, or weighing with the use of apparatus therefor, and probably immediate use cannot be made of the material, and wareroom (rent) must be found. Then comes the value of time. Having bought raw materials, you are poorer by the money you have spent, and you are richer by the materials you have got, but materials are of no value except in use, and if you cannot use them at once, then you are losing the value of your money; all these are costs that you might have left out of your calculation. You have now the cost associated directly with labour. There is the designer, there are craftsmen, each basing his value by condition, associated with his craft, and all subject to economic law. In the great industrial world services are mostly calculated at a price per hour. An hour is a distinct period of time a week is not, from an industrial point, as it contains sleep and

* Read before the Midland Chemists' Assistants' Association.

recreation time. The hour divided into work is an easy matter, and is much preferred by masters and men. I am running rapidly over these points just to show you how costs are arrived at. We will suppose, now, our construction due to the ability and energy of all employed has been completed; here, again, time comes in; neither materials nor labour lend any return until used, and the rewards of industry for the constructors can only come in when the finished work changes hands or bears interest by being lent or rented. And now let us see where he comes in. Is a thing worth what it costs to produce? No. It is only worth what a person will give you for it, and that may involve a big gain or a big loss. It has been said a thing is worth what it can be replaced by, but that is not true, for if a person will only give you a portion of its cost, replacing will not create its worth.

The value of a finished article follows an economic law, and is in inverse ratio to supply and direct ratio to demand. If, therefore, the value of your production is determined equally by demand or need, how comes it that things are mostly quoted on a cost basis? And what is the use of determining cost when need claims the price? Well, the answer is found in the above law, viz., "Difficulties in supply." These grow smaller however, year by year, and goods capable of transport keep well in advance. Your "need" would pay higher prices only "supply" keeps it down, but when the need is small and the price in consequence so low as not to pay its way, production ceases, and the equilibrium is restored; but how can you tell whether it "pays its way" unless you determine cost? That is why prices appear to be based on cost. There are some things, such as land and buildings, the "difficulties of supply" of which are insuperable; here "need" has an innings and pays up; cost does not come in at all, so it looks as if cost was only necessary to prevent reckless trading and to see how near the wind you can sail.

Now I trust I have succeeded in showing that price generally depends upon economic laws, and is determined by the "urgent of need" and "difficulties of supply," and you will recognise that if business is to result these opposites must come together.

There are, however, a number of disturbing elements, which are mostly psychological. Why do you pay Messrs. Black more than Messrs. White: is it because you hold that Messrs. Black is a more respectable house, or fancy their goods are better, or because they are such civil people? You go into the best, otherwise dearest, hotel if you possibly can afford it—what about habit and routine? These play a very important, even if limited, part in the affairs of life, and are worthy of your careful study, and you will notice are quite outside of cost.

And now you will want to know how all this bears upon dispensing charges. Well, it is capable, I hope, of clearing away some of the mist that envelops the subject. You hear it stated that there should be uniformity in dispensing charges. I say it is impossible unless the capacity to want is equal, which it is not, or the capacity to supply equal also, which it is not. It is calculated to show that a pharmacist any more than any other man, if he is to do business, must be able to calculate the cost, not because he can base his price upon it, but he can refuse unprofitable business. I fancy you say, who ever heard of a pharmacist having business to refuse? well, driving it away, there is no getting rid of the fact that the bulk of the dispensing does not come anywhere near the pharmacist. How far do your charges drive it away? How far do you adapt yourselves to the public want? I hear many grumbles of not getting a proper share of dispensing. Is dispensing a plum? Have you forgotten that the man who pays usually calls the tune.

Let us get to something practical. I find my chemist friends like something concrete, they forget that that is the easiest way to expose oneself to conflict. Once accept a principle and there are many ways of putting it into practice. However, I will go over the subject with you. I have seen a dispensing list for the year 1890, which is, I believe, a West-End list. It would therefore express the highest figures now reached for the art of dispensing. It is based upon dose, and, therefore, it falls under my criticism. I make no fault with what might be called its cheapness or its dearness, that has nothing to do with anyone outside those who buy and those who sell, but I would suggest that such a list would be better if service rendered was taken into consideration, this would very materially affect not the total, that I consider too low already, but the components; it would tend to make simple mixtures cheaper, complicated ones dearer. In arriving at such prices the proper guide should be the amount of time an average qualified dispenser would take to produce, *plus* special material having to be obtained, *plus* special tools, *plus* value of materials consumed. No attempt should be made to fix a general price for a finished production, the public requirement will not admit of it. The public have a right to determine for themselves whether they will pay a price which will guarantee to them the highest quality of labour and highest value of materials. The contract is between the pharmacist and the public, and not with the doctor, that is between himself and his patient, you cannot have a three-handed game. If the doctor instructs the chemist, then the patient has no voice and need not pay.

The value of dispensing time ought not to be difficult to fix. It is composed of the usual capitalised elements of a business which stand in regular relationship, such as rent and rates, which are in direct ratio to the position for doing business; wages calculated upon capacity, stock proportioned to turnover.

This dispensing time would work out very regularly. There would be nothing to prevent pharmacists deciding or agreeing generally upon this value, but there is no more necessity than you find in any other producing concern.

It would appear as if I was allowing the seller the right to determine his price, but really this is not so; the general total of these charges have been fixed by a gradual process of adjustment extending over many years, and are more or less suited to the public requirement and the needs of the seller in the place where they are made, but this only shows us what is and not what might be. If a man attempts business in neighbourhoods where there is a poorer population—and all cannot live in the West-End—his prices must fall to the level of the capacity to pay of his would-be customers. What that capacity is every business man has to find out, and this does not necessarily mean less income. He probably pays less rent, he is surrounded by a denser population, the quality of his labour may be lower and the finish to his production less. Up to now the pharmacist gets the work of the best doctors for the best (ability to pay) patients. Will he ever tap the wants of the many?

Constituent of Cork Soluble in Ether.—Having found that some commercial ether in corked bottles, when evaporated, left a crystalline residue, while that contained in glass-stoppered bottles gave none, Koch attributes this to the body mentioned by Siewert, Kügler, and Chevreuil as being contained in cork and soluble in ether and alcohol, to which Siewert gives the formula $C_{17}H_{28}O$, calling it phellyl alcohol. At first Koch regarded the residue as sulphur, but on re-dissolving it in carbon bisulphide and evaporating, needle-shaped crystals and not the characteristic rhombohedra of sulphur were obtained.—*Rev. Pharm.*, new ser., ii., 238.

PHOTOGRAPHIC NOTES.

Vitagraph, Cinematographe, Animategraph, Kinetograph, Kinesigraph, etc., all mean one thing, and that, the animated or living photographs which are now to be met with in every music-hall, every photographic exhibition, and many seaside places. One gets tired of these ever-recurring breaking waves, children feeding, and skirt-dancing, etc., particularly when the results are by no means steady, and one has curious flashes of light across the pictures, looking much like flashes of lightning, which are really due to defects in the film. One cannot be surprised at defects, considering that in some cases the positives which are used for projection are as much as eighty feet in length. A writer in *La Nature* suggests some new effects, such as the taking of a rose tree at intervals from the time it begins to bud, through its flowering to the fall of the leaf. Then, again, a landscape—in the spring, the summer, autumn, and winter—and we should thus be able to see in a few moments the growth of the rose tree, or the succession of the seasons; but look at the difficulties in avoiding movement of the instrument in the intervals, and the expense from expenditure of time.

The List of Developers is numerous, and much has been written upon them, but there is one developer which has earned never-dying fame, for in a photographic journal some two years ago a cleverly-written skit appeared, in which, at the meeting of a mythical photographic society, a mythical scientist, Dr. Burton Coxe, gave an account of his experiments with "hydroxyl monohydride." It was wonderful stuff, and did everything under the sun, and the editors of the journal in question never saw the joke, but seriously recommended the trial of this new (?) developer to its readers.

Hydroxyl Monohydride, or water, is seriously advanced now, however, by Mr. E. Banks as the true developer, or at least the hydrogen of the water, he claims, reduces the silver bromide to the metallic state, whilst the oxygen merely unites with the so-called developer, pyro, hydroquinone, eikonogen, etc.; and he further contends that the action of light is not to convert the silver bromide into the sub-bromide, but that it merely causes a re-arrangement of the molecules, and thus the hydrogen, as in a battery, completes as it were the electrical current and decomposes the haloid. The suggestion is a bold one, and not only feasible but can be proved, for a film of haloid can, after exposure, be reduced by a weak current.

Barium Platino-Cyanide has held the palm up to the present as the most brilliant fluorescing substance for *x*-rays. Now, however, Dr. Edm. van Melckebeke has discovered that the double fluoride of ammonium and uranyl gives far better results. According to 'Wurtz Dictionary,' vol. 2, p. 561, the formula for this should be $Ur_2O_2Fl_2,NH_4Fl$, but on trying to prepare it in the above weights, namely, 504 parts of uranyl nitrate to 111 of ammonium fluoride, no crystalline deposit could be obtained, and finally it was found that a crystalline compound was formed on the following equation:—

$$\left.\begin{matrix}2(UrONO_3+3H_2O)\\6NH_4Fl\end{matrix}\right\} = \left\{\begin{matrix}Ur_2O_2Fl_2,4NH_4Fl\\2NH_4NO_3+6H_2O,\end{matrix}\right.$$

or in the proportion of about 1 part of fluoride to 2 parts of uranyl nitrate. The crystalline deposit obtained is merely collected on a filter, washed with cold water, and dried, and when examined under the microscope presents a minute octahedral form with greenish-yellow reflection, colourless by transmission, which fluoresces brilliantly in the Röntgen rays.

Recent Advances in Photo-Micrography are to a great extent dependent, no doubt, upon the improvements which have taken place in objectives, the finest of which are constructed of Jena glass, in some cases combined with fluorite. Probably the greatest amplification ever made, however, is that shown by Professor Kohl at the Ausstellung für Amateur-Photographie in Berlin of one of the climbing hairs of the common hop, which was enlarged 1,265,000 times, and appeared like a big hammer with two heads.

Mr. David E. Packer, of the Astrophysical Station in Birmingham, has been for nearly a year now photographing the sun and the corona by means of some unexplained agency. A telescope is directed to the sun in the ordinary way, but instead of exposing the plate as usual, he covers it with light-tight lead foil, and thus obtains photographs of the solar corona and streams of what is probably luminous gaseous matter, which in some cases extends to a distance, equal to the diameter of the sun, from its edge.

Photography in Natural Colours.—One of the latest advances in photography in natural colours is that made by an American firm, who have applied the principle involved in Joly's process to the printing press. The usual method of making three-colour prints is to use three-coloured filters, orange-red, green, and violet, and from the negatives thus obtained to print in blue, red, and yellow. Joly placed his colour filters on one glass by ruling lines in these colours as close as 300 to 400 to the inch, and then placing a similarly ruled screen in contact with a positive. The application of his process to the printing press is likely to considerably facilitate the production of the so-called photographs in colours.

"Sympsychography" is hardly euphonious, but surely it correctly describes the wonderful science (?) which has filtered across the Atlantic. Some time ago a Mr. Ingles Rogers claimed to have photographed or at least obtained pictorial images of thought. Now a Mr. Jordan, who is described as a serious university professor, has gone one better. He obtained the assistance of six good men and true and placed them before six lenses which focussed only one image on to a plate. He told them to think of a cat, not the particular Thomas who nightly prowls, but merely cat in the abstract, and, wonderful to relate, he obtained the abstract cat. Emboldened by his success, he is going to reverse the process and extract from the fertile feline brain an abstract man. There is an old proverb of a cat laughing at a king, but probably the six felines will laugh at sympsychography.

Radiograph and Cinematographe.—The Queen, it is well known, whilst not herself a photographer, takes a great deal of interest in the pursuit, and, according to the lay press, she was the other day much interested in a "cinematographe film" of the Duchess of Fife's hands. That is the worst of using such long and hard words, for it is not everyone who can tell the difference between a radiograph and a cinematographe.

That the *X*-Rays have taken up an enormous amount of attention lately, both from the public and the devotees of science cannot be denied, and to many uses have they been put. The latest is said to be a patent for a cheap electrical storage battery, in which the electricity is generated by the vibrations of the transverse rays disclosed by Röntgen's experiments under the pressure of atmospheric air. The inventor, a Hungarian, by name Hartz, states that his apparatus can keep twenty 10-candle power lamps going for 2000 hours.

PHARMACEUTICAL JOURNAL.

A Weekly Record of Pharmacy and Allied Sciences.

ESTABLISHED 1841.

Circulating in the United Kingdom, France, Germany, Austria, Italy, Russia, Switzerland, Canada, the United States, South America, India, Australasia, South Africa, etc.

Editorial Office: 17, BLOOMSBURY SQUARE, W.C.
Publishing and Advertising Office: 5, SERLE STREET, W.C.

LONDON: SATURDAY, OCTOBER 24, 1896.

ON ASSISTED EDUCATION.

Reverting to the topic briefly touched upon last week—the increased interest now being taken by local pharmaceutical associations in matters educational—a problem that naturally presents itself for solution is "To what extent are such associations justified in supplying educational facilities?" Briefly, the answer must be, "So far as the arrangements made conduce to the welfare of pharmacy as a profession, without unduly encroaching upon the interests of individual members of the craft!" In other words, the proper control of educational requirements presents itself as a most appropriate means of self-protection. Whilst it is to the public interest that pharmacists should individually possess "competent practical knowledge," and for that reason they have been constituted a body apart, it is no less to the advantage of pharmacists that they should avail themselves of all legitimate means in the endeavour to raise their social status and preserve the professional integrity of that body. As time goes on those whom we have designated "the unfit" will gradually become weeded out from the ranks of pharmacy, but if this natural process of elimination is to be fully effective, it must be supplemented by the efforts of those with whom for the time being the responsibility for continued improvement rests. At the present moment, the comparative inefficiency of existing statutory requirements throws very great responsibility in this respect upon the pharmacists of Great Britain, but the means available are amply sufficient,—if they be but properly utilised—to serve as an effective check upon the ever-present danger of an invasion of our ranks by the professionally unfit.

At the risk of being accused of undue repetition of a many times twice-told tale, it may be pointed out, in the first place, that pharmacists are in nowise bound to take pupils, and that—having regard to possible eventualities—it is impolitic in the extreme to engage youths of an unsuitable class because of the temporary advantage thus offered by securing a plentiful supply of cheap labour. It has become a matter of vital necessity to urge, both in season and out of season, that it is eminently undesirable to receive pupils who have not had a first-class elementary education. Very little reflection should convince any pharmacist of the possible detriment to his own interests and certain injury to pharmacy generally incurred by facilitating the entry and training of imperfectly educated future competitors. Proof should be demanded, therefore, in every case, of the acquirement of a good-class school education. But more than this is necessary. Every would-be pharmacist should be made to understand clearly that it will be incumbent upon him to provide the wherewithal to cover the expense of a prolonged course of scientific and technical training, and if not satisfied that such will be forthcoming when required, the pharmacist ought to recognise but one course—reject the application.

It is indeed very essential that those who aspire to legal status in pharmacy should be prepared to pay their own way, and not look to those already in business to share the burden of expenditure with them. Pharmacists in practice already bear their fair share of burdens, and they must steadfastly set their faces against the pauperisation of pharmaceutical education. This is the rock ahead upon which the barks of local associations may split, if those bodies fail to insist upon students attending organised schools and classes paying full value for the instruction they receive. The example of the Pharmaceutical Society counts for nothing in this case, for students attending the School of Pharmacy do pay fair value for the instruction there imparted, in spite of the heavy expenses incurred by the Society on that score. The idea prevailing with the Council is to make the School serve as an object-lesson, to show what an ideal pharmaceutical education should be, and not to cheapen that education. In years to come, perhaps, that purpose having been fully served, the School of Pharmacy may with advantage be allowed to cease to exist on its present footing. But by that time model schools will probably be the rule rather than the exception. Meanwhile, it is necessary to emphasise the fact that the advantages derivable under a system which fosters such schools can only be realised by strict centralisation, for there can be no greater fallacy than to imagine that the sum of money now spent annually on the School of Pharmacy could do more good, or even as much, if distributed in grants to various provincial centres. The only possible results would be to pauperise students who ought rather to be taught to maintain their independence, to fritter away a valuable means of benefiting pharmacy, and to dissipate what modicum of advantage accrues under the existing system of partially-assisted education.

THE USE OF PRESCRIPTIONS.

In an article on this subject, the *Medical Press and Circular* enlarges upon the mischief that may result from the handing about of prescriptions among friends and relations, and the failure of even educated persons to recognise the proper *rôle* of the medical adviser. Mention is also made of difficulties to be overcome before the mere making up of medicines can be handed over entirely to the pharmaceutical chemist. Strangely enough, our contemporary's remarks on the subject are entirely confined to the case of "cheap dispensary and poor-class practice, ranging, say, from sixpence to eighteenpence," which can neither afford adequate remuneration to a medical man nor bear additional cost for dispensing. But the most noticeable part of the article is the statement put forward as representing "matter of fact" that

> "the medical man has a statutory right to make up and sell medicines whenever he may choose, whereas the chemist, on the other hand, is acting in an illegal manner when he prescribes for his customers, or gives them medical advice."

The surprise expressed by the writer that "such a fundamental difference" should be ignored in discussions upon the burning question of counter prescribing well illustrates the mischief done by mistaken views as to the legal rights of chemists and medical men, and the impracticability of arriving at any satisfactory settlement of the question on that basis.

ANNOTATIONS.

The Formation of the Pharmaceutical Society, as was recently pointed out, took place on April 15, 1841, but it is suggested that the fact of the first Council of the Society having developed from the Committee appointed at the meeting held at the "Crown and Anchor Tavern" on February 15 of the same year, is sufficient reason to justify the insertion in the Calendar of the earlier date as that of the actual formation. This argument, however, is altogether beside the mark, and it might with just as much reason be urged that the meeting held at the house of Mr. Farmar on February 10, 1841, was the beginning of the existence of the Society as a definite body, since Geo. W. Smith, who later became the first Secretary of the Society, then acted as Secretary *pro tem.*, and the chemists and druggists then assembled together resolved to hold the public meeting of the craft, which was without delay convened for February 15, the circular issued for the purpose being signed by a number of influential individuals and firms who had, curiously enough, taken no part in the former proceedings.

The "Crown and Anchor" Meeting of February 15 was not called to do anything in the direction of constituting a permanent association, nor is there any evidence that the subject was discussed or even mentioned. It was merely resolved to protest against certain clauses of a Bill to amend the laws relating to the medical profession of Great Britain and Ireland, then before Parliament, and, with that object in view, to solicit subscriptions from all the chemists and druggists of the United Kingdom, whilst a Committee of thirty-three members, with power to add to their number, was appointed to watch and oppose the progress of the Bill. The Committee met on the following day, and again on February 22, when it was announced that the objectionable Bill had been withdrawn. It was wisely decided, nevertheless, to continue on the defensive, and a Sub-Committee was appointed to take such steps as might be found necessary in the event of further attempts being made to hamper the practice of pharmacy.

The "General" Committee subsequently held numerous meetings, at which "the propriety of establishing a society was frequently suggested," but no unanimity "on the details of so important a measure" could be arrived at until the occasion of the historic tea-party at Bell's house, when several members of the Committee discussed the subject in a friendly manner and agreed to a few resolutions as the basis of the proposed Society. The matter was put into more definite shape at a meeting of the General Committee, now consisting of forty members, on April 5, when it was decided to call a general meeting of the craft with a view to forming an association under the style of the "Pharmaceutical Society of Great Britain." The public meeting was thereupon convened and held at the "Crown and Anchor Tavern" on April 15, when the Society was actually formed as previously described (*ante*, p. 315).

The Calendar for 1867-68 was the first one published, and it contained the error already referred to. It probably originated in a momentary confusion of dates and, the statement occurring in a place where it was unlikely to attract attention, was allowed to go unchallenged from year to year, being naturally copied from one edition to another, as plagiarists sometimes copy mistakes in literary matter appropriated without acknowledgment, and so reveal themselves in their true light. There would have been no occasion to refer to this matter, which is in itself unimportant, save on the score of maintaining accuracy in all our records. For there is nothing novel in any of the facts adduced, which are simply quoted from our own early pages, as can easily be verified by reference to "A Concise Historical Sketch of the Progress of Pharmacy in Great Britain," written by Jacob Bell, and published in 1843 as an introduction to the *Pharmaceutical Journal*, the first volume of which had not long been completed. This account, which is not generally known in its original form as an introduction to the Journal, was reprinted in 1880, not originally published then as sometimes ignorantly assumed, in spite of the preface to the book. With the addition of Redwood's account of the further progress of events until the passing of the Pharmacy Act of 1868, this remains the only detailed and connected history of the Pharmaceutical Society up to the time of its establishment on its present basis. The later history of the Society remains yet to be compiled from contemporary records, but it is hardly necessary to say that all the details will be found when required, like those of earlier date, in the pages of this Journal.

The History of the School of Pharmacy is now in a fair way to be written, as many interesting reminiscences have already been sent in by students of long ago, whilst others are promised. Curiously enough those whose experiences are most recent, and whose recollections are presumably freshest, are much more backward than their predecessors of classic times in furnishing the desired material. It may be well to repeat, therefore, what was stated in the Journal of September 12, that "finished articles are not required but brief notes jotted down as they may occur, and dealing with every aspect of the subject. . . . Lack of literary ability need not act as a drawback, for the information that is required can best be conveyed in the form of letters, such as might be sent to familiar friends." At the same time such reminiscences as may be received in a fit state for publication will appear in the pages of the Journal under the contributors' names. Whether it will be possible, ultimately, to produce a connected account of the progress of the School and those connected with it, in volume form, time must decide. Meanwhile the Editor awaits further notes and suggestions from everyone interested in the matter.

The 'Extra Pharmacopœia' was amongst the works which received well-deserved notice at the Prague Exhibition, so the publisher intimates, the series of eight editions of Martindale and Westcott's book being awarded a gold medal and diploma. The first edition received a medal at the corresponding exhibition held in Vienna thirteen years ago. Mr. E. L. Henry, of Lewisham, also notifies that he has been awarded a medal and diploma at the Exhibition for his "unique and unpretending pharmaceutical rhyme-book," published under the title of 'Mnemonic Aids in Pharmacy.' The official report on the Exhibition, which is not yet to hand, may perhaps reveal the principle governing the awards, whether it is that of the now defunct prize packets—all prizes and no blanks—or some other not so readily conceivable by the mere lay mind. In any case it ought to be interesting.

The Chemists Ball looms before us as an event that will shortly require to be taken into account in arranging one's future proceedings, and Mr. John C. Umney, whose organising capacity as Honorary Secretary was so markedly displayed in connection with this year's ball, asks us to notify that a meeting to make preliminary arrangements will be held, by permission, at 17, Bloomsbury Square, W.C., on Monday, November 2, at 2.30 p.m. All who are willing to assist in making the ball of January next a success are invited to attend this meeting, and any would-be members of committee or stewards who may be unable to be present are requested to communicate with Mr. J. C. Umney, 66, Gordon Mansions, Francis Street, W.C.

The Price per Dose, according to Mr. R. D. Gibbs (see p. 364), is not the basis upon which dispensing charges should be made to-day. He is of opinion that this system pleases no one, and in the aggregate yields a poor result. The tendency of a more rational plan would be, he thinks, to make simple mixtures cheaper and complicated ones dearer. In arriving at prices "the proper guide should be the amount of time an average qualified dispenser would take to produce, *plus* special tools, *plus* value of materials consumed." The idea appears to be that no attempt should be made to fix a general price for a finished production containing a definite number of doses. The main difficulty would be to ascertain the value of dispensing time, but Mr. Gibbs suggests how this might be done, and his arguments are well worth the attention of our readers. The Birmingham assistants wisely decided to postpone full discussion of these suggestions and arguments until they have had time to consider them carefully. Perhaps other readers of the Journal may likewise have something to say on the subject, which is undoubtedly of the greatest importance to pharmacists and well worth discussing.

The Government Laboratory at Port-of-Spain, Trinidad, has been burnt out, chemicals, instruments, and books to the estimated value of two thousand pounds having been destroyed by the fire, which occurred on Sunday, September 27. The cause of the fire is unknown, Dr. Walter Ince, who was in charge in the absence of Professor Carmody, having left the building properly secured and all in order early the previous afternoon. It appears, however, that this is but the latest of a series of mysterious fires that have occurred in the town, and there is a disposition in the local press to attribute it to the action of an incendiary. Dr. Ince will be sympathised with by many friends at this stroke of ill-luck.

Death of Dr. Trimen.—We have heard with regret of the death on Sunday last, at Peradeniya, Ceylon, in his fifty-third year, of Henry Trimen, M.B.(Lond.), F.R.S., F.L.S., late Director of the Royal Botanic Gardens, Ceylon. Dr. Trimen is best known to pharmacists as joint author with Bentley of 'Medicinal Plants,' a most valuable work, prepared whilst he was senior assistant in the botanical department of the British Museum, prior to which he had acted as lecturer on botany at St. Mary's Hospital Medical School. But he was also for many years Editor of the *Journal of Botany*, one of the authors of Trimen and Dyer's 'Flora of Middlesex,' and had of late years been engaged in writing his 'Handbook to the Flora of Ceylon.' Three volumes of this have been published, and the fourth will complete the work. Dr. Trimen held the position of Director of the Royal Botanic Gardens, Ceylon, from 1880 until quite recently, when he retired on account of ill health. He was a generous donor to the Museum of the Pharmaceutical Society, and had been a corresponding member of the Society since 1892, his name being included in the first list of such members, elected by the Council in May of that year. Dr. Trimen's genial disposition and pleasant manners rendered him a great favourite with all who knew him.

The Midland Pharmaceutical Association is maintaining its reputation by commencing the new session well. An excellent programme is provided for the session, and the arrangements for the inaugural meeting, on Tuesday, November 3, are likely to prove exceptionally attractive. First there will be a reception at 8 o'clock in the evening, after which the President (Mr. T. J. Gibson, of Wolverhampton) will deliver his address. Refreshments will next be served to revive exhausted Nature and prepare for the great attraction of the evening, music and dancing occupying attention from 9.15 to 12. Carriages may be ordered for 12 o'clock, and for the convenience of persons residing at a distance arrangements have been made with the Grand Hotel for bed and breakfast tickets (6*s.* each, including attendance), our Birmingham friends revealing their practical genius by this brilliant stroke of policy. Members may obtain additional tickets for their friends at 3*s.* 6*d.* each, and it is requested that early application be made for these cards of admission, to the Assistant Honorary Secretary, Mr. J. C. McKenzie, 71, Parade, Birmingham, as only a limited number can be issued.

Bacteriology for Pharmacists.—The authorities of University College, Liverpool, have again provided instruction in practical bacteriology by means of a class held once a week, on Mondays at 8.15 p.m., in the Bacteriological Laboratory, Ashton Street. Professor Rubert Boyce spares no pains to impart to students a good practical knowledge of this interesting and important subject, and when it is considered that free access is allowed to a laboratory recently fitted with the very newest apparatus, in accordance with the latest developments of bacteriological science, it is remarkable that the University authorities can offer such advantages for the small fee of £1 1*s.* for the course of twelve lectures, including the use of microscopes and all apparatus. The lectures were devised with a view to the particular demands of veterinary surgeons, pharmacists, and students of agriculture, and previous knowledge of the subject is assumed. There ought to be a good attendance of students to encourage the University authorities in their venture.

Liquefied Acetylene on the commercial scale has claimed its first victims, a cylinder of the kind in which the liquid is conveyed to customers having exploded at the works of M. Raoul Pictet in Paris and killed two men on Saturday last. According to the *Times* correspondent the cylinder, which was made of nickel-steel and about a yard long, appears to have been returned from Brussels practically full amongst a lot of empty ones, and the fact that the remains of both men were covered with black dust points to probable decomposition of acetylene. It is believed that a lamp must have been held near the cylinder or heat generated in releasing the screw. But what the actual circumstances were, and how the explosion occurred, it is difficult to say, for the two men who were killed were the only persons in the shed where the explosion took place. All the windows in the factory and in adjoining premises were broken, and the wall of the shed was shattered, but two large gasometers and thirty cylinders filled with acetylene remained intact. It is anticipated that regulations for acetylene factories will now be put in force, and all such factories be banished outside Paris. As the use of acetylene for optical lantern illumination and other scientific purposes is increasing in this country, whilst the gas is also being introduced into country houses for illuminating purposes, the possible risk attending its use should be carefully guarded against by pharmacists and others interested in the supply of this poisonous and explosive compound in the compressed form.

Death of Professor Markoe.—We regret to announce the death on September 25, in his sixty-first year, of G. F. H. Markoe, Professor of Pharmacy, College of Pharmacy, Boston, Massachusetts, U.S.A. Professor Markoe was found dead in his laboratory, and is supposed to have had a paralytic seizure. He was a friend of the late H. B. Brady, and attended the Brighton meeting of the British Pharmaceutical Conference in 1872, when Brady was President. On that occasion he was elected an honorary member, on the motion of Mr. Hanbury, seconded by Mr. Schacht.

CHEMISTS' ASSISTANTS' ASSOCIATION.

SMOKING CONCERT.

The first smoking concert of the session in connection with this Association was held at the Frascati Restaurant, Oxford Street, W., on Thursday, October 15. When the Chairman, Mr. T. H. W. Idris, J.P., L.C.C., announced the first item on the programme, the large hall was well filled, and before the conclusion of the first part of the evening's entertainment the late comers had rather a difficulty in finding seats. There were about two hundred persons present, amongst whom were Mr. R. Bremridge, Professor Green, Mr. John Moss, Mr. T. C. W. Martin, Mr. Lloyd Williams, and Mr. F. A. Rogers. A capital programme had been prepared, and was adhered to with but slight alterations. Besides seeming invidious, it would be difficult to single out any one artist as the "star of the evening," for, without exception, all were well received, and in most cases loudly encored.

During an interval in the programme, Mr. C. Morley, President of the Association, in a few well-chosen words thanked the Chairman (Mr. Idris) and the Vice-Chairman (Mr. John C. Umney) for the able and effective manner in which they had fulfilled their duties. He also wished to thank Mr. E. W. Hill, who had largely had to do with the arrangements for the evening, and all who had so ably contributed to the evening's enjoyment. He extended a hearty welcome to all present, and invited all chemists' assistants who had not already joined the Association to do so, expressing a hope that many who were there that night for the first time would throw in their lot with them and become useful and active members of the Association.

Mr. Idris, in replying, spoke of his high regard for the calling in which most of those present were engaged. With regard to his duties that night, they had been exceptionally light: he had always found that whenever a body of gentlemen of their profession met together, as they had that evening, they were a remarkably well-ordered assembly. Travelling in Pompeii recently, he saw an inscription over a chemist's house which, he thought, showed the character of the chemist and his high notions as to the respectability of his calling. Next door to the chemist's was a house that was not as well conducted as it might be, so he had placed over his shop an inscription, which read, "This is not a place for the idle and wanton to waste their time, but for men who require medicines and go their way."

Mr. Umney (Vice-Chairman), responding to the thanks of the President, said it gave him great pleasure to be there, and also to see so many present. He had been connected with the Association for ten years, and he thought he had never seen more assembled together than there were that evening.

The second half of the programme was then proceeded with, and about 11 o'clock concluded with the National Anthem. The committee who had charge of the arrangements, which were carried out so admirably, were Messrs. C. Morley (President), R. G. Guyer, A. R. Melhuish, H. H. Robins, C. E. Robinson, C. J. Strother, E. A. Umney, and E. W. Hill, Honorary Secretary.

MANCHESTER PHARMACEUTICAL ASSOCIATION.

ANNUAL MEETING.

The annual general meeting of the above Association was held on Wednesday, October 14, Mr. G. S. Woolley, the President of the Association, in the chair. The Hon. Sec., Mr. A. Blackburn, read the annual report for the twenty-ninth session, in which the Council of the Association stated that there had been a general meeting and six ordinary meetings, all of which had been well attended. Papers and lectures had been kindly given by Messrs. Kirkby, Turner, Hoseason, and Lane. The Council had, during the session, had before them the claims of the Proprietary Articles Trade Association. The schemes which this trade association had put before the Council had, however, appeared too incomplete to admit of any action being taken at present. During the past session the Manchester retail price-list had been carefully revised and brought up to date. The new edition will be ready in January next. The sub-committee having the work in hand was composed of chemists from different districts, the difficulty of fixing the prices for localities has thus been fully met. The prices fixed are such as may be reasonably asked for the quality of drugs such as a chemist is expected to supply. It is hoped that the list will be adhered to as far as possible by the chemists of the district. Prizes were offered for competition at the opening of the session, and entries were more numerous than on previous occasions. The papers of the candidates were good. The Council noted with pleasure that the Manchester Association Scholarship had this year been gained by a local student, Mr. Thomas Oldham Barlow, who has distinguished himself on two previous occasions. The Library fund continues as in previous years. An excellent programme has been arranged for the thirtieth session, and the Council appeals to the members to do all they can to strengthen the Association and make it capable of performing good work. On their behalf the Council recorded with regret the deaths of Messrs. J. Hart, T. B. Marsden, J. Wheeldon, and Herbert Holt, and the sympathy of the Association was tendered to their respective families.

The Treasurer (Mr. Bowden) read the balance-sheets for 1894-5 and 1895-6. For 1895-6 the receipts had been £31 2*s.* 7*d.*, and the expenditure, £23 6*s.* 4*d.*, leaving a balance of £7 16*s.* 3*d.*

The President moved the adoption of the report and treasurer's accounts. He said there was no burning question before them at the present time. Education was a good deal in the air just now, but those present knew as much and, perhaps, more than he could tell them on that subject—not that he wished to hint or suggest for a moment that any gentleman had finished his education—he knew he had not; but to the ordinary acceptation of the term "education" he thought there was nothing that could be added by a person like himself, but there was just one subject they could talk about, and that was the prospects of the coming session. Reverting for a moment to education, they would have read a paper of Mr. Brudenell Carter's, who advocated a more thorough knowledge of the English language, and he most cordially agreed with him. He thought that was somewhat overlooked at the present day. The President expressed himself a little disappointed at the smallness of the attendance. There were 116 names on the list, and yet only 71 subscriptions paid in the year. He urged that some means should be devised to increase the number of members, as he thoroughly believed there was a great future before the city of Manchester. He did hope the chemists of Manchester would co-operate with them in the direction he had indicated, and that those who did join would pay their subscriptions.

Mr. J. Rymer Young seconded the resolution, and said it was most regrettable that there should be such "appalling apathy" amongst chemists. He thought to some extent it was the same all over the country, though perhaps they might be a little better off. He expressed a hope that in future there would be more competition for the Association Scholarship, and that a better state of things would prevail in the future.

The report was carried unanimously.

The following gentlemen were elected members of the Council for the ensuing twelve months:—Messrs. A. Blackburn, H. Kemp, W. Kirkby, W. Lane, A. J. Pidd, W. Westmacott, J. Wild, G. S. Woolley, J. W. Walton, F. W. Bates, E. Yates, and J. Rymer Young.

The proceedings closed with the customary votes of thanks.

BRIGHTON JUNIOR ASSOCIATION OF PHARMACY.

This Association held the first scientific meeting of the session on Wednesday, October 14, at Newburgh Hall, Cannon Place, the President, Mr. S. Jeeves, in the chair. Two very interesting papers were read, one by Mr. A. H. Cupit on the subject of "The Leech" and another by Mr. Stanley Kent concerning "Soap." In the first Mr. Cupit described leeches as belonging to the natural order Sanguisuga, and consisting of several varieties, those in question belonging to Gnathobdellidæ, signifying a dental apparatus composed of armed muscular ridges. The varieties specified for use by the Pharmacopœia were described fully, and also their natural habits and conditions of life. Early in the century it was considered that blood-letting was a panacea for every ailment, but thanks to change of medical opinion the lancet, cupping glass, and scarificator have been relegated to obscurity, and only the leech remains for the purpose. The leech was known to and mentioned by Herodotus and Theocritus, Nicander, Cicero, Horace, Pliny and others, and was familiar to naturalists before Linnæus. Galen recommended the use of them. They are to be found in warm climates in marshy places, ponds, stagnant pools, plenty of weed, etc., being favourable to their habits. Their natural food is the blood of frogs, lizards,

fish, etc., to which it attaches itself by means of a sucker at the tail extremity of its body, another sucker is situated at the head, and it is by means of this and by the aid of three semi-circular jaws set with sharp incisors that it derives its sustenance from its victim. The stomach is composed of twenty-four cells divided by membrane, and when gorged with blood the animal will sink to the bottom of the water, and not rise for another meal for twelve or eighteen months. Human blood is nearly always fatal to the leech, though for what reason is not clear. The average life of leeches in the natural state has been said to be twenty-five years, but in captivity they have been known to live only six years. Some splendid specimens of the subject were shown by Mr. Cupit, who said he was indebted to Messrs. Fitch and Wottingham for them, one specimen especially, the "Hambro Speckled," a name given to a particular variety by the firm mentioned, who say that after long experience they find that this specimen is the longest lived, the healthiest, and answers all medical purposes. Statistics supplied by Messrs. Fitch and Wottingham show how remarkably the use of the leech has declined. Early in the century they sold on an average 50,000 leeches per week; now their output is about half a million per annum. The price per thousand thirty-five years ago was £10 to £15; at the present time it is about £4.

Mr. S. Kent's paper on soap explained the general facts of the manufacture of that extremely useful commodity, the various fats, oils, alkalies, etc., and the numerous processes necessary to obtain the final condition in which it is offered for sale to the public. Both papers were extremely interesting and no doubt instructive to not a few, as instanced by the interest which was manifested in the discussion which followed the reading thereof.

ULSTER PHARMACEUTICAL ASSOCIATION.

ANNUAL MEETING.

The first annual meeting of this Association was held in the I.O.F. Chambers, 5, Royal Avenue, Belfast, on Tuesday evening, 13th inst., at 8 o'clock, Mr. W. Prott, President, presiding.

Mr. R. W. McKnight, Hon.-Sec., read the annual report, which represented the Association in a flourishing condition, numerically and financially. During the Session 1895-6, seven original papers on pharmaceutical or kindred subjects, were read at the meetings of the Association. Two social meetings in the form of smoking concerts were held. The Committee had been fortunate during the Session in securing the patronage of the following gentlemen:—Professor Hodges, M.D., J.P.; Professor Whitla, M.D., J.P.; Professor Cuming, M.D.; Dr. Whitaker, Dr. J. W. Brown, and Dr. A. Dempsey, J.P.

The business of the meeting was principally the election of officers for the ensuing year:—The following gentlemen were elected to the different positions:—

President:—W. Prott, Esq., M.P.S.I. and E.

Vice-President:—Dr. M'Kinney, M.P.S.I.; Dr. Fielden, M.P.S.I.; Dr. Tweedie, M.P.S.I.; Dr. Watt, M.P.S.I.; Dr. Ward, M.P.S.I.; J. W. Nicholl, M.P.S.I.; J. Montgomery, M.P.S.I.; P. J. Lyons, M.P.S.I.; A. McNaught, M.P.S.I.; J. E. Connor, M.P.S.I.; J. C. C. Payne, M.P.S.I.; J. Tate, M.P.S.I.

Committee:—Messrs. J. Guiler, Waugh, Agnew, G. Camlin, and F. W. Began.

Honorary Secretary:—R. W. McKnight, M.P.S.I.

Assistant Honorary Secretary:—R. S. Moore, M.P.S.I.

Treasurer:—D. W. Elliott, M.P.S.I.

Four new members were nominated for election.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION.

At a meeting held on Wednesday, October 14, Mr. H. Jessop presiding, a paper entitled "How to Arrive at Dispensing Charges" was read by Mr. R. D. Gibbs, ex-President of the Midland Pharmaceutical Association. This is printed in full at page 364.

The paper met with a good deal of criticism, and after some discussion it was decided that the subject should be brought up again at some future meeting, in order that each member could have an opportunity of giving the arguments his careful consideration.

A hearty vote of thanks was accorded to Mr. Gibbs for his paper.

During the evening several new members were proposed, and donations were acknowledged from Messrs. Burroughs and Wellcome, Jas. Woolley, Sons, and Co., the Apollinaris Co., and Goodall, Backhouse, and Co.

PHARMACEUTICAL SOCIETY OF IRELAND.

EXAMINATION RESULTS.

At an examination for the licence to act as a registered druggist, held by permission of the authorities, at Queen's College, Belfast, the following passed:—Messrs. R. I. Eccles, I. R. Mackey, J. M. McKitrick, D. Walsh, W. E. Wilson. Two candidates failed to pass.

The following have passed the Pharmaceutical Licence Examination:—Messrs. F. Garty, J. A. Deakin, J. Suche, J. J. Cahill, C. S. Tynan, A. Farrington, A. E. Welsh. Six candidates were rejected.

PHARMACEUTICAL CHEMISTS' AND APOTHECARIES' ASSISTANTS' ASSOCIATION OF IRELAND.

At Dublin on Friday, October 16 a committee meeting of this Association was held at the Pharmaceutical Society's house, 67, Lower Mount Street, Mr. D. Nagle, L.P.S.I., in the chair. The minutes of the last meeting were adopted.

Correspondence was read between the Association and the *Pharmaceutical Journal*, and after some discussion on the subject matter it was agreed to defer the question until the next meeting. Mr. W. B. Payne, late honorary treasurer, wrote from Belfast enclosing report and statement of accounts for the past twelve months. The report, which will be read at the annual general meeting in November, touched on the chief events of the year, and the statement of accounts showed in detail the receipts and expenses of the Association since July, 1895, when the Association was started. Mr. Payne expressed his regret at being obliged, through residence in Belfast, to sever his connection with the Society, and tendered his best wishes for its continued success.

The Chairman said it was much to be regretted that they were to lose Mr. Payne's valued services now that things were going on so well. Thanks to his energy and business-like qualities, they were able to show a substantial credit balance after paying all debts. They all knew how difficult it was to make both ends meet in associations such as theirs, and the knowledge that two or three kindred societies had started in Dublin from time to time and had lasted just as many months served to show the truth of his remarks. In the face of this there was reasonable cause for gratification in the knowledge that they stood on the right side of the books. The Association had done good work, and he believed it would continue to bear good fruit. The kind acceptance by Mr. W. F. Wells, President of the Pharmaceutical Society, of the Association's invitation to preside at the annual public meeting on November 6 was learned through Mr. Turner, with much pleasure, and it was decided to issue cards of invitation to members and their friends with the least possible delay for Mr. Howie's lecture on Mont Blanc, the synopsis of which will be published later on. On the motion of Mr. Hardy the following were appointed a sub-committee to make the necessary arrangements for the limelight apparatus and other details of the entertainment:—Messrs. Nagle, Turner, Hunt, and O'Sullivan. Messrs. Alister, McCarthy, and Hardy, *ex-officio* members, also consented to act on the sub-committee. It was arranged for the sub-committee to meet on the 20th inst., at 51, Heytesbury Street.

The question of holding the annual business meeting before or after November 6 was discussed; it was thought that by postponing the annual meeting until a date immediately following Mr. Howie's lecture a larger attendance would be assured. This was agreed to. In reply to a member the Chairman stated of course ladies would be welcomed at the public meeting. It was decided to issue special invitations to the Pharmaceutical Council and to the leading physicians, scientists, and pharmacists of Dublin. Messrs. Turner and Hunt, auditors, reported that the accounts had been well and properly kept with due regard to economy, and that there was at present a balance in hand of £8 3*s.* 2*d.*, exclusive of a number of outstanding subscriptions. Mr. Turner consented to act as Treasurer *pro tem.* Mr. O'Sullivan said there were now about seventy members in good standing, and with a little exertion during the coming year the number would be more than trebled. This would afford an opportunity of supplying each member with a copy of the *Pharmaceutical Journal* free of charge. The question of extending voting powers to every member irrespective of his financial relations with the Association was discussed and decided in the affirmative. This concluded the business.

NATAL PHARMACEUTICAL SOCIETY.

THE NEW MEDICAL ACT.

A well-attended meeting of the Natal Pharmaceutical Society took place on Thursday, September 3, when the President of the Society (Mr. G. A. Champion) occupied the chair. He stated that the object of the meeting was two-fold—first, "to discuss the recently passed Medical Laws Bill"; secondly, "to nominate members who were to receive the support of the Natal Pharmaceutical Society at the forthcoming contest for seats on the Natal Pharmacy Board." The Medical Laws Bill had become law, but, during its progress through Parliament it had been so mutilated that it was by no means the kind of Bill the chemists had hoped for. There were several clauses that would prove troublesome both to the public and the chemists. He thought, however, the chemists had reason to be glad that the Government had granted them as much as they had done in getting the Bill through Parliament, and it now remained with the chemists themselves to suggest improvements and bring them before the Government in due course. He had no doubt that before the next session of Parliament many improvements would be brought to the notice of the Society by those who were mainly affected by the Bill. He agreed with the members that active steps should at once be taken with regard to one portion of the Bill, and therefore placed before them the following resolution. which was proposed by Mr. H. H. Puntan, seconded by Mr. J. Burn, and carried unanimously.

> "That in the opinion of this meeting Part v. and Schedules A and B, relating to the keeping and sale of poisons and drugs, are absolutely unworkable, and that the Committee take steps to represent the matter to the Government at an early date, with a view to amendment."

Discussion then took place relative to the nomination of those who were willing to stand for election at the forthcoming contest for seats on the Natal Pharmacy Board. Voting was by ballot, which resulted in Messrs. C. E. Forth and S. K. Elgie, of Durban, and Mr. J. E. Marchant, of Verulam, being selected for support by the Society.

LEGAL REPORTS.

PROCEEDINGS UNDER THE PHARMACY ACT.

Illegal Sale of Poison and Use of Title.

Pharmaceutical Society v. *Mendel.*

On the 16th inst., at the Lambeth County Court, before His Honour Judge Embden, the Council of the Pharmaceutical Society of Great Britain sued A. Mendel, of 5A, Maxted Road, Peckham, for penalties in respect of offences against Section 15 of the Pharmacy Act, 1868.

Mr. T. R. Grey, instructed by Flux, Thompson, and Flux, appeared for the Society.—Defendant did not appear.

Mr. Grey, in opening the case, stated that defendant was sued for two penalties of £5 each, one for keeping open shop for the retailing of poison, and the second for using the title "Chemist." Two articles were bought at defendant's shop on June 24 last, one described as "Paregoric," the other "Oxalic Acid." With regard to the substance labelled "Paregoric," analysis had proved that it did not contain opium, consequently he could not proceed in respect of that article, but he wished to point out that without the opium it was not, in fact, paregoric, and the defendant was deceiving the public and offending against another Statute. His case did not rest on the "paregoric," for the other purchase, on analysis, proved to be "oxalic acid," a poison named in Part 2 of Schedule A to the Act. As to the offence for use of title, it would be seen from the labels on the purchases defendant described himself as a "consulting chemist," and the same title appeared over his shop premises. After referring to various sections of the statutes, he pointed out that by Section 15 it was an offence for any person whose name did not appear upon the Register produced to keep open shop for the retailing, dispensing, or compounding of poison, or to take, use, or exhibit the title of "chemist" in any form, and each offence was punishable by a fine of £5.

His Honour: Is this the Register of all chemists?

Mr. Grey: Yes, in England, Scotland, and Wales.

His Honour: And defendant's name is not here?

Mr. Grey: No. There are several cases, but I do not think it will be necessary to trouble your Honour with them.

His Honour: No. Call your witnesses.

Mr. J. Partridge, examined by Mr. Grey: Was instructed by the plaintiff Society to go to 5A, Maxted Road, Peckham. He went on June 24 last. The appearance of the shop was that of a chemist's. Name over door: "A. Mendel" on the facia, "Medical Hall" on one side and "Consulting Chemist" on the other. Asked for threepennyworth of paregoric and twopennyworth of oxalic acid. The bottle and packet each bore a label: "A. Mendel, Consulting Chemist."

Mr. Ernest J. Eastes, F.I.C., examined by Mr. Grey: I am an analyst. I received the bottle and packet from Mr. Partridge. I carefully analysed the contents of the bottle labelled "paregoric," but found it did not contain opium. There should always be opium in "paregoric"; it is the chief ingredient. The packet contained a quarter of a pound of oxalic acid.

Mr. Grey: I put in the Register and that is my case.

His Honour: This is a case of serious importance. Not only has defendant infringed the Pharmacy Act by selling poison, but he has done so by calling himself a "consulting chemist," by which he means that he is a competent chemist. In addition to those offences he has committed a further serious offence; he has sold a bottle which was supposed to contain "paregoric," but which it now appears did not contain opium, the most essential ingredient of that medicine, which, if bought for the purpose of administering to a person in a case of illness, might by reason of its not containing what it ought to contain result in very serious consequences. I say that this is a very serious case indeed, and I have no hesitation in inflicting the full penalty for each offence, and they are small penalties for offences of such an important nature.

Mr. Grey: I ask your Honour to certify for Counsel.

His Honour: It is of greatest importance in the public interest that these cases should be heard. Not only has defendant infringed this Act, but he has done more by selling a medicine purporting to be paregoric which was not in fact "paregoric." This is a very important Statute indeed for the protection of the public, and I shall give plaintiffs their costs on the higher scale.

PROCEEDINGS UNDER THE FOOD AND DRUGS ACT.

Boric Acid in Milk.

Three milksellers were summoned at the Birmingham Police Court, on the 16th inst., for selling milk containing boric acid. Dr. Hill, the city analyst, deposed to analysing the samples of milk submitted to him, and to finding in one case sixty grains of boric acid to one gallon of milk. The acid, he said, was used as a preservative, but its effect on the consumer was likely to be deleterious. It caused irritation of the stomach, indigestion, diarrhœa, and was a nerve depressant. The general opinion of the medical profession was that the acid was injurious, and it was thought that many mysterious diseases were caused by the use of antiseptics. Boric acid prevented the coagulation of milk by rennet. The defendants, who were each fined small sums, pleaded that they sold the milk in the condition in which it was when purchased from the wholesale dealer.

EDINBURGH COURT OF SESSION.

The Property in a Recipe.

Decision in the Porteous Vegetable Ointment Case.

In the Court of Session, Edinburgh, Lord Low has given judgment in the action raised by Wm. Mathison Inverleith, The Place, Edinburgh, Alexander Porteous, leather merchant, Edinburgh, and others, members of the Porteous Vegetable Ointment Co., against Archibald Porteous, brother of the last-named complainer, a commission agent, residing at Abercromby Place, Stirling, and carrying on business at 33, Ann Street, Glasgow. The complainers sought to have the respondent interdicted from making or selling an ointment under the name of "Porteous Vegetable Ointment," in such a way as to induce the belief that it is of complainers' manufacture, and from using the name on his circulars and labels (for report of evidence see *ante*, p. 75).

Lord Low, after reviewing the evidence, gave judgment for the respondent, quoting the case of Burgess *v.* Burgess with respect to "Burgess Essence of Anchovies" in support of his decision. He found that the complainer, Alex. Porteous, did not possess the sole right to make Porteous Vegetable Ointment when he sold the recipe

to the syndicate, inasmuch as he was not the inventor, nor had he in any way exclusive title to the recipe, nor was he the sole manufacturer. Therefore he was of opinion that the respondent is entitled to sell the ointment as Porteous Vegetable Ointment, but is not entitled to represent that the article sold by him is manufactured by the Edinburgh firm. In regard to the boxes and labels used by the respondent, the latter had been at great pains to get a box as much unlike that of the complainers' as possible, and his Lordship thought he had succeeded in doing so. No person who had seen the boxes could mistake the one for the other. With regard to the circulars there was necessarily a similarity between the respondent's circular and the one used by the complainer, seeing that both had the same object in view, and there was every reason to believe had also the same origin. It was clear the respondent had no improper object in view in framing his circular, and unless it could be said that his circular represents or was likely to have the effect of representing his ointment as manufactured by the complainers he could not be interdicted from using it. Comparing the two circulars, anyone who took the trouble to consider the matter would not be led to the conclusion that the respondent's ointment was made by the complainers. He would, indeed, see that the respondent claimed that his ointment was the same as the complainers' ointment, and that it served the same uses, and was applied in the same way. That was a true representation, which the respondent is entitled to make. There was one respect in which both the circulars and the labels appeared to be objectionable. The respondent stated in both that the ointment is prepared from the original recipe in the sole possession of Archibald Porteous. That statement was untrue, and obviously calculated to injure the complainers. The respondent had only a copy of the original recipe, and although no doubt its terms were the same, the statement quoted, that the original document is in the respondent's possession, was not the case. The statement further suggested that the complainers' ointment was not made according to the original, which also was not the case. His Lordship did not suggest that the statement was made dishonestly, but it was not in accordance with fact and was calculated to prejudice the complainers. He was therefore of opinion that the respondent is not entitled to continue to make the statement. The respondent was found entitled to his expenses as taxed.

NEW REMEDIES.

[*The notes given under this heading embody recent suggestions in therapeutics. They cover both new drugs and preparations, and old ones under new aspects. The word "parts" is used to represent parts by weight, both for solids and liquids.*]

Salacetol as a Local Antiseptic.—When in contact with living tissues salacetol is, according to Ottolenghi, slowly decomposed into salicylic acid and acetol, and is an active antiseptic without causing irritation; it is preferable to salol since it is more soluble and richer in salicylic acid, and also much more rapid in its action.—*B. M. J. Epit.*, 1/96/92.

Salol in Diarrhœa.—Combined with subnitrate of bismuth and prepared chalk, Fussle (*Therap. Gaz.*) considers that salol is one of the most valuable remedies, particularly in those cases resulting from indiscretions of diet. The employment of salol gives rise to no unpleasant symptoms, and is not followed by constipation.—*Rev. de Thérap. Med. Chirurg.*, lxiii., 567.

Ichthyol in Whooping Cough.—Commencing with daily doses of 5 to 20 centigrammes, and gradually increasing to 60 centigrammes or even 1 gramme in the twenty-four hours, Mæstro has obtained excellent results with the internal administration of ichthyol; the drug is well tolerated, and is without any harmful action on the kidneys.—*Rev. de Thérap., Med. Chirurg.*, lxiii., 573, after *Pediatria.*

Sodium Hyposulphite in Diphtheria.—Wickers states that he has for some time past employed a local application of sodium hyposulphite for painting the membrane in diphtheria. The solution consists of equal parts of saturated aqueous solution of the salt and glycerin. Three or four applications are generally sufficient to clear away the false membranes. The application is made with a brush twice daily or oftener if necessary.—*Lancet*, 1/96/1562.

NEW IDEAS.

[*Inventors and manufacturers are invited to submit specimens of novelties, descriptive notices of which will be inserted for the information of readers of the Journal. Whenever possible, illustrative blocks adapted to the width of the Journal columns should accompany the particulars sent. Address: Editorial Department, 17, Bloomsbury Square, W.C.*]

CALENDARS FOR 1897.

The hypothetical "J. Williams, Dispensing and Family Chemist, St. Albans," is to be congratulated on the excellent advertisement he obtains by having particulars of his business so prominently displayed on H. Silverlock's new specimen pocket calendars for the fast-approaching 1897. These calendars are specially arranged for chemists, and those who have not utilised such aids to business before may feel tempted to do so now, if they will but inspect the dainty booklets and tastefully decorated folding cards that have been designed for the new year by the well-known chemists' printer.

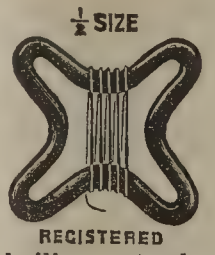
TOILET SOAP AND PERFUMES.

On the principle that wisdom comes from a multitude of counsellors, cleanliness ought nowadays to be ensured by the abundance of soaps which are presented to the public with every variety of attraction that can be added in the way of perfume and association with materials capable of exercising a beneficial action on the skin. In this respect the toilet soaps manufactured by Messrs. T. and F. Bristow and Co., of St. James's Walk, Clerkenwell, deserve notice for their excellent character. The different kinds of soap will be found to suit all tastes in regard to perfume; they are all well made, and put up in a tasteful manner, both as separate cakes and in boxes of three cakes. They combine both elegance and excellence with cheapness, and the same may be said of the perfumes put up by this firm.

MALT PREPARATIONS.

The colour and flavour of the "Exonia" brand of extract of malt, prepared by Messrs. Evans, Gadd and Co., of Exeter, leave nothing to be desired, whilst its diastasic power is equally satisfactory. As to the keeping properties of the extract, that is fully guaranteed by the makers. A happy thought of the firm has led to the production of a novel and useful preparation, containing 75 per cent. of the extract of malt and 25 per cent. of condensed milk. This "Malt and Milk" possesses a piquant taste, and should prove both attractive and nourishing to children and invalids. It undoubtedly constitutes an exceedingly valuable food.

NEW GLASS LIGATURE REEL.



The want of an aseptic ligature reel for silk which would be both simple, efficient, and at the same time cheap, has long been felt. Solid reels have the disadvantage when in use of requiring prolonged boiling to sterilise the deeper layers of the silk. Messrs. Reynolds and Branson, of Leeds, have therefore made a reel out of glass rod bent into the shape of a Maltese cross, so that the innermost layers of silk can be easily permeated by boiling water in the process of sterilising. They have produced a very simple and cheap reel according to this plan, made in glass of various colours, so that the different sizes of silk may be easily distinguished. The glass is toughened by the boiling and does not easily break. The reels, it may be noted, are made in England.

NEW SIGHT TEST-CASE.

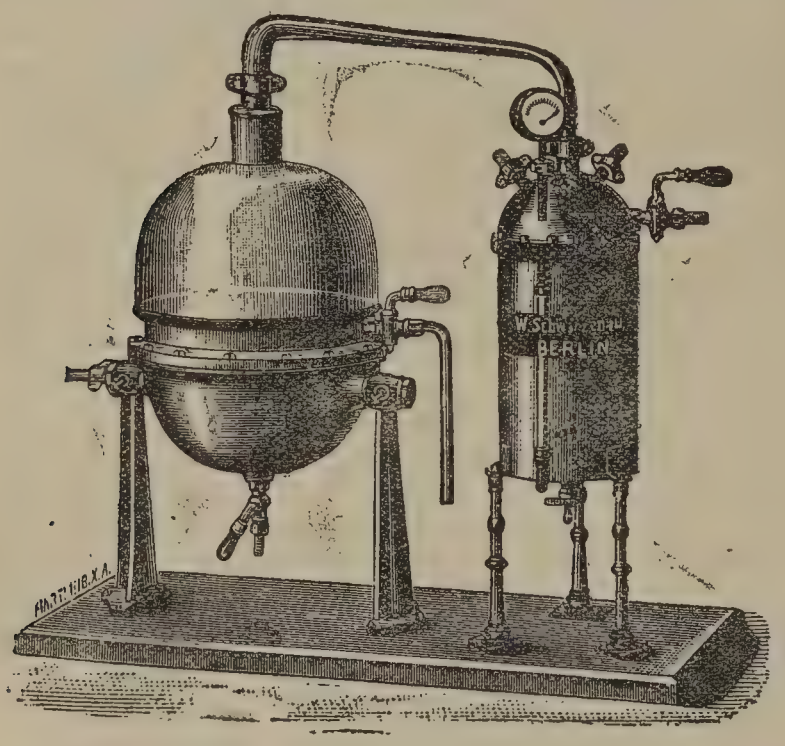
A good and cheap test-case has long been required by pharmacists who have taken up the optical trade, and to meet this want Messrs. J. Raphael and Co., 51, Clerkenwell Road, E.C., have recently brought out a new test-case containing a full set of spherical glasses, both in plus and minus, from 025 to 20 D., also the single lenses in the cylinders from 025 to 8 D., both plus and minus. A special feature of the case is that the box is marked in the English inch measurement, as well as in the di-optric system. The case, which contains a double and single trial frame for the reception of the lenses, is mounted in solid walnut, lined with red satin, and is a presentable ornament for a chemist's counter case. The price is £5 5*s.*, but for those who are desirous of more thoroughly entering into this business, the firm offers more complete outfits. The case referred to, however, is designed specially to meet the chemists' ordinary every-day requirements.

SOME OPTICAL NOVELTIES.

Messrs. Raphael and Co. have also introduced some novelties in ladies' lorgnettes in tasteful aluminium frames. These articles are intended to supersede the old-fashioned mounts which were formerly made in shell and celluloid, and were very apt to break. The firm's special opera, field and marine glass, with very delicate calf body, is a very useful and serviceable article sold at 35*s*. Aluminium opera glasses, at prices ranging from 12*s*. 6*d*. to 50*s*., are also stocked, as well as aluminium field glasses mounted in crocodile leather, which have a special quick movement for focussing rapidly.

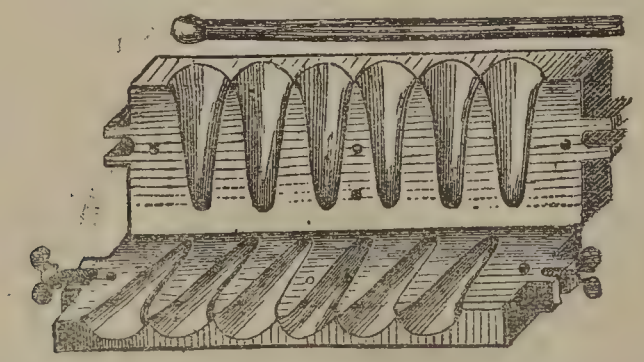
SMALL VACUUM STILL.

Messrs. Schwarzenau (Berlin) manufacture for use with steam or with hot water a small vacuum still that might supply a want often felt in pharmaceutical laboratories of moderate size. It consists of a jacketed copper pan fitted with a nearly hemispherical glass head from which a beak leads to a condenser. The glass head rests on a rubber ring sunk in the rim of the jacketed pan and is firmly held there by atmospheric pressure as soon as partial evacuation has been effected. The condenser is closed and constructed either to save the distillate or to run it to waste. Evacuation is effected by means of a water-jet vacuum pump which can be supplied with the apparatus. If desired, a porcelain dish fitting into the copper pan can be supplied, so that the distillation of liquids attacking copper can be effected without injury to the pan.



NEW SUPPOSITORY MOULD.

Messrs. Liebau, of Chemnitz, have produced a simple apparatus for making suppositories of any size up to 120 grains by simple pressure with a wooden plug. The mould is metal nickel plated, has a centre-pin and a screw-clamp at each end. The coco butter previously mixed with the medicament is introduced in weighed quantity into each division of the mould and firmly pressed, first with a small and afterwards with a larger plug. Some pharmacists recommend the powdered or grated cocoa butter to be mixed with a small quantity of olive or almond oil.



REVIEWS AND NOTICES OF BOOKS.

Commercial Organic Analysis. Vol. III. Part III. By Alfred H. Allen, F.I.C., F.C.S. Second edition, revised and enlarged. Pp. 508. Price 16*s*. London: J. and A. Churchill, 1896.

This is the fifth volume of Mr. Allen's admirable work on commercial organic analysis. It treats of the less important alkaloids not described in the previous volumes—bitter principles, animal bases, animal acids, and cyanogen compounds. The alkaloids of papaya, colchicum, laburnum, stavesacre, calabar bean, gelsemium, ipecacuanha, pomegranate, jaborandi, pepper, sabadilla, the hellebores, potato, with an addendum on the aconite alkaloids, are those respectively described. Of the bitter principles we have the chief glucosides, including salicin, saponin, digitalin, strophanthin, jalapin; and of the animal bases, amongst others, creatinine, xanthin, and the ptomaines. The section on the acids comprises the acids of urine, bile acids, and the lactic acids. The whole of this subject matter is new, whilst the last part dealing with cyanogen and its derivatives has been revised and enlarged since its previous publication.

It is hardly necessary to say that Mr. Allen has given his usual care in compilation, not hesitating to accept in some instances the collaboration of others who may have given special attention to some of the subjects dealt with. It is difficult in preparing a work of this character to sift all the material, for, unfortunately, many memoirs are now published, especially on the alkaloids, which have to be received with caution before acceptance, and it is not surprising that the author has some difficulty in this respect. There is too much stress laid on the colour reactions by many chemists as a means of distinguishing the alkaloids, and Mr. Allen has only followed the usual custom in describing them, but very little practical assistance can be derived from many of these colour tests—such a one, for example, as pilocarpine giving a green colour with bichromate and sulphuric acid—and it is time that chemists appreciated at its proper value such information that an alkaloid is precipitated by Mayer's reagent, gallo-tannic acid, potassic-bismuthic iodide, etc. We do not know the authority for the statements that solutions of pilocarpine are neutral to litmus, and that commercial pilocarpine hydrochloride contains jaborine.

The article dealing with the titration of alkaloids is not so satisfactory as the rest of the work, and the results of a perusal of it may be summed up by agreeing with the author's preliminary remarks that "very discordant and disappointing results have been obtained in certain instances." In the same uncertain category may be placed the author's remark on the assumed anomalous behaviour of quinine to certain indicators of neutrality, that "the observations made may necessitate a revision of the accepted views on the basicity of quinine." It will be news to quinologists to be informed that "the sparingly soluble sulphate $Qu_2H_2SO_4$ is distinctly alkaline to litmus, and hence this indicator cannot be conveniently used for the titration of quinine," although it is well known that commercial sulphate of quinine is alkaline to litmus. The section on the glucosides is very complete; it contains a useful table, giving the source, formulæ, and hydrolytic products of the better-known glucosides; in this part the analysis of commercial mustard is given, as well as methods for detecting adulteration. Digialin and strophanthin are also fully described, and the detection of hop substitutes in beer as far as this is possible. The section on the animal bases includes piperazine, leucine, asparagine, betaine, choline, neurine, and muscarine. Urea is also included, and the chief methods for its determination reviewed—perhaps in view of the author's excellent treatise on urine, this article might have been omitted—also creatinine and the separation of the flesh constituents

by a scheme compiled from various sources, which is said to be applicable to extract of meat, but we fear not much satisfaction as a guide to the value of a meat extract would thereby be obtained. The articles on xanthine, guanine, sarkine, carnine contain all that is known about them. Perusal of the article on ptomaines shows what little information we have about these bases, and what difficulty there is in detecting them with certainty, while the futility of attempting to rely on colour reactions for the detection of such bodies is again shown. Mr. Allen goes so far as to say that ptomaines in the corpse have undoubtedly been mistaken for poisonous vegetable alkaloids administered during life. The section on the acids of urine, urinary deposits and calculi, as we have intimated with urea, might here have been dispensed with. The acids of bile, bile pigments, lactic acids and cyanogen conclude the volume.

In conclusion it may be added that this volume, like the preceding ones, is essential to every chemist and pharmacist.

EXTRACTS FROM CONSULAR REPORTS.

Saltpetre.—Consul-General Dundas in his report on the trade and commerce of Hamburg for the year 1895, states that the quantity of saltpetre used up in Europe in 1895 is given at 913,000 tons. Of this amount, something more than half—426,000 tons—was imported into Hamburg, in comparison with 400,000 tons in 1894. During the year more than half the above quantity—235,471 tons—would appear to have been re-exported by sea, by rail, and by river; the bulk going to the Baltic ports of Upper Prussia, to the Russian Baltic ports, to Great Britain, and to Sweden. Some 1470 tons went to Japan. The total value of the quantity re-exported amounted to £515,470. Prices throughout the year, with a brief rise now and again, remained low.

Ginger.—In a Foreign Office report on the various vegetable products of Mexico it is stated that the returns from ginger plants on an acre of land vary considerably, but when cultivated under favourable conditions the crops ought to be 4000 lbs. and upwards. The cost of cultivation, harvesting, and curing is 1½c. to 2c. per 1 lb. The freight to ports in the fertile lands of the valleys of the Gulf Coast in Vera Cruz, Tabasco, and Chiapas will not be over 1 dol. per cwt., together with the cost of bags, holding the equivalent number of pounds. The price in New York and London ranges from 12c. to 22c. gold per 1 lb. Thus a man having a 10-acre patch would have an annual income of 5000 dols. to 7000 dols.

Sarsaparilla.—In the same report, Sir Henry Dering says that the "Jamaica sarsaparilla" plant (*S. officinalis*) grows something like the common yam of Mexico, and it requires similar treatment. The cultivation will give a return in from two to three years, and the roots may be harvested every year after the first crop is gathered. The roots are carefully dug up and cut off near to the stalk, which is then moulded up with surface soil. Fresh roots will soon spring out, and they will grow rapidly. The roots after being dug up are freed from adhering earthy particles, and sometimes to clean them properly it is necessary to wash them in water. They are then dried in the sun, and afterwards tied up in bundles and packed in bales for export. The first crop is said to yield as much as 20 lb. of dried roots per plant. The Indians who grow it usually plant sarsaparilla at about 20 feet apart, with other crops. The vines are trained to stakes and trellises. The crop is reaped in about two and a half years from the time of planting. When prices are high, the gross returns on sarsaparilla cultivation are very great. The market for this product is, however, very limited. For export it is usual to tie up the roots in bundles about 1 foot or 18 inches long, and weighing from 12 to 20 lbs. each, and these bundles are packed in bales weighing from 80 to 100 lbs. or more. While the present wholesale price in Mexico is about 10c. per 1 lb., the wholesale price in Europe is a little over 5*s.* for the same quantity.

Jalap.—Referring to this drug Sir Henry Dering says at the third year of cultivation a return may be expected, and it is found in India that at least 1000 lbs. of dry tubercules can be gathered from an acre under jalap cultivation, and crops may be reaped every third year thereafter. It is advisable, however, to lift two or three plots one year, whilst others are left undisturbed until the following year, and so on. In this manner crops will be got every year, and there will be less difficulty in preparing the product for the markets, as there will be fewer tubercules to dry at a given time. The drying process is a difficult and trying one, for 70 per cent. of the weight has to be evaporated, and it frequently happens when the tubercules are dried in the sun that there is a considerable loss on account of some becoming mouldy and others becoming subject to fermentation. This loss may be prevented to a great extent by gashing the tubercules or by cutting them up into slices, but jalap prepared in this way fetches a lower price in the English and American markets. The American evaporator answers very well, but too much heat is to be avoided, as it spoils the product. The Indians of Mexico prepare jalap in the following way:—The tubercules when gathered are freed from earth and foreign matter, and then hung up in a net over a wood fire kept constantly burning in the hut; and in consequence the jalap acquires a smoky flavour which is considered by buyers to be one of the tests of "good tubers." The method of the Mexican Indians may be adopted by those engaged in jalap cultivation. Rough, inexpensive trash sheds can be constructed, and the tubercules may be dried slowly in them over wood fires, at a slight outlay and with little trouble. To prevent accidents the fires should be put out at night, for the smoke and the heat will prevent fermentation and mouldiness.

OBITUARY.

Brooke.—On October 15, Thomas Brooke, of Bramhope and Lily Hall, Maltby, near Rotherham. The deceased was formerly a member of the firm of Hirst, Brooke, and Hirst, manufacturing chemists, Leeds, and had been in business in this city for many years, when he retired about fifteen years ago. Of an active temperament, he continued to devote a good deal of his time to business affairs that claimed his attention, and also to the pursuit of agriculture at his estate at Maltby. He was an ardent sportsman, and in this way passed a good deal of his leisure.

Main.—On October 6, John Alex. A. Main, Chemist and Druggist, of Edinburgh. Aged 26.

Slater.—On October 8, Thomas Slater, Chemist and Druggist, of Stone. Aged 85. Mr. Slater was actively engaged in business till 1891, and took an active part in public matters, being a member of the Town Hall Committee, and also a trustee of the Town Hall.

Bennison.—On October 14, Richard Bennison, Chemist and Druggist, of North Ormesby. Aged 44.

Dealve.—On October 17, Albert E. Dealve, Chemist and Druggist, of Wadebridge. Aged 24. Mr. Dealve was a native of Tavistock, and while at Wadebridge had become a general favourite. He was the vice-captain of the local football club, and during the season of 1895-6 was its hon. sec. The news of his death, after a short illness, was heard with deep regret by all who knew him.

CORRESPONDENCE.

All Articles, Letters, Notices, and Reports intended for publication in the Journal, Books for Review, and communications respecting Editorial matters generally must be Addressed "Editor, 17, Bloomsbury Square, London," and not in any case to individuals supposed to be connected with the Editorial Staff. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

"The Aim of Preliminary Education."

Sir,—Mr. Brudenell Carter's remarks on the misuse of words remind me of the following instances in chemistry:—We read of brown hæmatite and red ochre. The first syllable of the Greek word hæmatite means blood, that is red, whilst the word ochre, also Greek, means pale. It is therefore a verbal contradiction to speak of brown hæmatite and red ochre. I should say that it would puzzle most medical and pharmaceutic graduates to state off-hand the origin and real meaning of such simple words as tansy, doll, quinsy, ball, migran, arsenic, litharge, hydrarge. The matter may not be of what is usually regarded as practical importance, but it is interesting, and it is not creditable that educated men should be ignorant on such points. To my mind the most important part of a knowledge of Greek and Latin is to understand the real meaning of our own language, and this amount of knowledge of the "dead languages" can be easily acquired by any one.

October 13. Medicus (60/40).

Sir,—"Lincolne, Senr.," says "things that stand around may also stand above or (?) below." He has read into Mr. Carter's address a restricted meaning of "standing around," namely, "encircling by a horizontal band"; but Mr. Carter's words warrant no such construction. "Around," in this connection, takes no account of direction; knows no "up" or "down," but simply means "around." "It may also mean around, like an atmosphere," says your correspondent. I do not think it can mean anything else, and cannot imagine a body existing in an atmosphere being referred to as under it.

October 19, 1896. Midlothian (61/17).

Sir,—As I had read with much pleasure Mr. Brudenell Carter's address to the students of the School of Pharmacy, which contains some excellent and much-needed advice, I considered very carefully the criticisms on it that appeared in the Journal over the signature Lincolne, Senr. I shall feel much obliged if you will allow me space for two remarks on the said criticisms.

First, the writer says that the prefix "circum" may refer to surrounding like an atmosphere. Quite true, but I think people generally speak of being "in" an atmosphere. Then why not say "in" those circumstances? Second, he objects to the expression "the method of education which has given England the majority of her greatest men," and wishes to substitute for it "which England has given the majority of her greatest men." May I suggest that we do not usually give an education to great men; we give an education to small boys, and the education in return gives us great men—sometimes.

Ventnor, October 20, 1896 M. Gibson.

ANSWERS TO QUERIES.

Trade-Mark for Sale.—Apply to the leading dealers in druggists' sundries. [*Reply to* S. S.E.—60/39.]

Moss Identified.—*Tortula mutica*, Lindb. You will find this illustrated in Dixon and Jameson's 'Student's Handbook of British Mosses' (see *ante*, p. 170). [*Reply to* R. D.—61/20.]

The Right to Prescribe.—As a "matter of fact" anyone is at liberty to prescribe, but it is illegal to "act as an apothecary." What the latter means in law is not definitely known as yet. [*Reply to* Blackgent.—60/26.]

New Pharmacopœia, etc.—(1) Nobody knows; very uncertain. (2) Yes! (3) As the colour would be precipitated under the circumstances you mention, try carmine instead of an aniline colour. [*Reply to* W. H. F.—61/16.]

Navy Dispensers.—There is no such position as navy dispenser, but there are a limited number of dispenserships in naval hospitals. Refer to the Calendar of the Pharmaceutical Society for full particulars. [*Reply to* Navy.—61/27.]

Anodol and Amidol Tabellæ.—The word "tabellæ" is claimed by Messrs. Allen and Hanburys as their exclusive property, and they alone make compressed tablets under that name. Amidol tabellæ they make, but anodol (?) tabellæ they do not know. Apply to the firm for further particulars. [*Reply to* Verax.—60/41.]

Herbarium Competition.—Reference to the conditions of the competition, which will be sent to you free on application to the Secretary of the Pharmaceutical Society, should make it clear to you that exotic plants are not within the conditions. Moreover, as it is required that the "habitat" of each specimen submitted shall be indicated, it would seem that plants grown in gardens are not admissible, though this is not explicitly stated. On points such as this, one's sense of ordinary fairness should be brought into play. [*Reply to* G. H. M.—61/5.]

Cananga Oil.—This is the name applied to an oil resembling that of "Ylang Ylang." It is distilled from the flowers of *Cananga odorata*, N.O. Anonaceæ, indigenous to Burmah, and cultivated in many parts of the Eastern Archipelago. The oil is largely exported from Java, and the highest grade from Manila. Its price varies very greatly according to quality. The finest Manila Ylang Ylang oil is more delicate and yet more powerful in odour, has a specific gravity of from 0·940 to 0·955, and is more soluble in alcohol than the ordinary "cananga" oil. This latter has a specific gravity of 0·910 to 0·920; it has been exported in such quantity that it is now very cheap, ruling about 18*s.* per pound. For high class perfumery, however, only the very best brands are to be recommended. [*Reply to* H. G.—60/43.]

Lintner's Method of Determining Diastase.—A standard starch solution is prepared by weighing into a strong bottle 2 grammes of air-dried potato starch, adding to it 10 C.c. of a one per mille solution of hydrochloric acid and about 60 C.c. of water, corking securely, and heating to 100° C. in a water bath for half an hour. The acid is then exactly neutralised with one per mille soda solution and the whole, when cool, made up to 100 C.c. The malt extract solution is made by dissolving 2·5 grammes of malt extract in water and making up to 50 C.c. Into each of ten test-tubes, 10 C.c. of the standard starch solution is introduced, and to these successively 0·1, 0·2, 0·3, etc., C.c. of the malt extract solution is added, up to 1·0 C.c., and the diastase allowed to act for one hour, at 38° C. Five C.c. of Fehling's solution is now added to each test tube, and the whole are immersed in a water bath for ten minutes. The tube in which all the cupric oxide has just been reduced is taken as indicating the diastasic power; to express this in comparative figures, a malt extract solution of the stated strength, 0·1 C.c. of which will reduce 5 C.c. of Fehling, is taken as the maximum standard or 100 from this, the other degrees of observed activity are calculated and expressed as degrees Lintner. You will find a detailed account of the process in a paper by Sykes and Mitchell in the *Analyst*, xxi., 122. [*Reply to* S. W. J.—60/29.]

PUBLICATIONS RECEIVED.

Berichte über die pharmakognostische Litteratur aller Länder. Issued by the German Pharmaceutische Gesellschaft. Berlin: 1896.

Bericht von Schimmel and Co. Leipzig: October, 1896.

Communications, Letters, etc., have been received from Messrs. Bindloss, Blackburn, Bramley, Branch, Daniel, Ellis, Forret, France, Giles, Goodall, Gostling, Groves, Hall, Hill, Howie, Ince, Lewis, Marsh, McKnight, Meadley, Park, Reynolds, Spilsbury, Stewart, Swayne, Trent, Umney.

"THE MONTH."

Test for Formic Aldehyde. As the result of a special examination of the methods of testing for minute quantities of formic aldehyde, Dr. Lebbin finds that a very excellent result may be obtained by means of the red-coloured condensation product formed with resorcin. To a few cubic centimetres of a solution containing formic aldehyde, some resorcin (about 0·05 Grm.) is added with about an equal volume of caustic soda (50 per cent.), and the mixture heated to boiling. The yellowish colour first assumed then becomes deep red, and is permanent. This reaction does not appear to take place with other bodies besides formic aldehyde, and, according to Dr. Lebbin, the test may be relied upon for detecting the presence of formic aldehyde in ten million parts of water. In the proportion of one-millionth the indication is very marked, and a volumetric method of quantitative determination may be adopted.—*Pharm. Zeitung.*, xli., 681.

Pyrethrin. In previous investigations of the root of *Anacyclus pyrethrum* (see Bucheim, *Pharm. Journ.* [3], vii., 315, and Thompson, *Pharm. Journ.* [3], xvii., 567), the products obtained were little more than purified extracts, but Schneegans has recently succeeded in preparing pyrethrin in a state of purity. He describes it as colourless, crystallising in needles which melt at 46° C. Pyrethrin has a very hot taste, is soluble in absolute alcohol, acetone, ether, benzene, acetic acid, chloroform, or carbon bisulphide. It is dissolved by concentrated sulphuric acid with yellow coloration, soon changing into red. For the preparation of pyrethrin a dry alcoholic extract of the root was digested with absolute alcohol, the solution purified by adding lead acetate, and evaporated to syrupy consistence, mixed with some lime and sand, and then dried. By treating this mixture with petroleum spirit a pale yellow solution was obtained, which left on evaporation a syrupy residue that became crystalline after exposure for some time over sulphuric acid.—*Chem. Zeit.*, xx., 846.

Beberine. M. Scholtz finds that methyl alcohol is the best solvent for the purification of this base. On dissolving the impure commercial base in methyl alcohol, colourless crystals are deposited, which melt at 214° C. and have a composition corresponding with the formula $C_{18}H_{21}NO_3$, assigned to beberine by Bödeker and Flückiger. In the crystalline condition, beberine is very sparingly soluble in either methyl or ethyl alcohol, even when boiling, and on cooling such a solution the base is deposited in crystals. Acetone or chloroform solutions give an amorphous residue of lower melting point than the crystals. The hydrochloride is also crystallisable, and it melts between 259° and 260° C.—*Berichte*, xxix., 2054.

Absorption of Ultra-Violet Rays by Crystals. J. Agafonoff, having studied about a hundred and thirty crystalline substances, finds that matter in this condition does not as a rule absorb ultra-violet rays in a marked degree. Chromates absorb all the ultra-violet, violet, and blue rays, the presence of chromium appearing generally to increase absorption. Nitrates absorb more than sulphates, and organic bodies are extremely absorbent. The strong absorption of the latter seems to indicate that chemical molecules tend to absorb ultra-violet rays more abundantly in proportion as they are more complicated. Except chromates, substances which have a strong absorption crystallise badly, whilst those that crystallise well are in general transparent to the ultra-violet rays, as, for example, alums, quartz, fluor-spar, sulphates, tartrates, citric acid, and erythrite.—*Comp. rend.*, cxxiii., 490.

Chloroform. A new method of preparation consists in acting upon tetrachlormethane (CCl_4) with zinc and hydrochloric acid. Chlorine is replaced by hydrogen, according to the equation—

$$CCl_4 + 2H = CHCl_3 + HCl$$

The hydrochloric acid thus formed acts upon the zinc with liberation of hydrogen, by which a further quantity of tetrachloride is reduced to chloroform. When there is no further formation of hydrochloric acid, the liquid is allowed to cool and the layer of chloroform separated from the solution of zinc chloride.—*Pharm. Centralh.*, xxxvii., 715.

Determination of Oxygen. Professor Clowes has found that a considerable volume of carbon monoxide is evolved during the absorption of oxygen from the Brin gas, although this does not occur in absorbing oxygen from the air. To prevent error in the former case it was found necessary to absorb the carbon monoxide by cuprous chloride solution before reading off the residual nitrogen. A better plan, however, consists in preventing any evolution of carbon monoxide by the use of pyrogallol and potassium hydrate. With the following proportions, it is stated that no fear of this source of error need be felt, even when pure oxygen is being absorbed:—Potassium hydrate, 160 Gm., is dissolved in water, 130 C.c., and pyrogallol, 10 Gm., is then dissolved in the alkaline solution.—*Chemical News*, lxxiv., 199.

Bismuth Oxy-Iodide. This compound has been obtained by T. R. Blyth, as a result of distilling the double iodide of methylamine and bismuth $(CH_3NH_2HI)_2$ $(BiI_3)_2$, with caustic soda, in order to obtain the methylamine. The new body, $Bi_{17}I_3O_{24}$, is described as a light crystalline powder, having a slight brown tint, unaffected by boiling water or alkalies, but soluble in dilute hydrochloric acid. Nitric acid decomposes it, with liberation of iodine, whilst sulphuretted hydrogen decomposes it into sulphide. The oxy-iodide can also be prepared by boiling bismuth sub-iodide, BiOI, with caustic soda.—*Chemical News*, lxxiv., 200.

Preparation of Titanium. Working with the electric furnace, H. Moissan has found that titanic acid, in the presence of carbon, can be converted into crystallised titanium oxide with a current of 50 ampères and 50 volts, whilst with 350 ampères and 70 volts the bronze-yellow titanium nitride, Ti_2N_2, is obtained. Increasing the current to 1200 ampères and 70 volts, the nitride is decomposed, crystallised titanium carbide, TiC, being formed free from nitrogen. Metallic titanium containing only two per cent. of carbon is obtained by heating the carbide with excess of titanic acid. It is the most refractory substance yet obtained by means of the electric furnace, being more infusible than vanadium. In other papers the investigator deals with the preparation of molybdenum, uranium, manganese, and iron and carbon borides, by the aid of the electric furnace. He claims to be the discoverer of crystallised calcium carbide, but gives Wilson credit for having introduced its manufacture into the United States.—*Annales de Chimie et de Physique* [7], ix., 229.

Influence of Oxygen on Yeast. In reference to a statement by Chudiakow that the fermentation of a sugar solution is retarded by passing air through the liquid, R. Rapp suggests that the observations upon which it was founded were misleading. His experiments show that oxygen is essential for the multiplication of yeast cells, that it does not influence fermentation, but that violent agitation of a fermenting liquid may sometimes stop fermentation.—*Berichte*, xxix., 1983.

Acetylene as an Explosive. The demand for acetylene in the liquid state will probably be influenced considerably by the recent explosion at Paris, and some results in a paper read by Professor Clowes at the British Association meeting at Liverpool, tend to emphasise the fact that considerable and unnecessary risk is bound to attach to the use of the illuminant in that form. He finds that acetylene gives a wider range of explosive proportions than hydrogen, carbon monoxide, ethylene, or methane, and remarks that this is probably due to its endothermic nature, "which leads to the gas being able to generate heat by its own decomposition. Heat thus generated would undoubtedly aid in causing explosion, and would thus extend the limits of explosive mixtures." It was found that at least 3 per cent. of acetylene must be present in air before the mixture can be kindled by a flame and caused to burn throughout. As the proportion of acetylene is increased, the explosive character is augmented, but when 22 per cent. is present carbon begins to separate during the burning, and the amount of this carbon increases until the explosive character of the mixture disappears, 82 per cent. of acetylene being then present in the air. Berthelot and Vieille (*Comptes rendus*) also report on their investigation of the explosive nature of acetylene. They point out that as an endothermic compound its decomposition sets free a quantity of heat equal to that evolved by combustion of an equal volume of hydrogen to water. In connection with the industrial application of acetylene, the authors have studied the conditions under which acetylene explodes, with a view to indicating the precautions to be observed in its use. They have extended their inquiry to the influence of pressure, concussion, and heating. Hence they conclude that in the use of acetylene the possible disadvantages do not equal its advantages as a lighting material, and cannot limit its application. Too sudden discharge of the compressed gas must be avoided, and care must be taken to absorb heat evolved during compression and by internal reactions, so as to prevent any considerable rise of temperature.

Brucine and Nitrites. P. Pichard states that the coloration of brucine by hydrochloric acid, in the presence of a nitrite, furnishes an extremely sensitive reaction. One drop of the nitrite solution is mixed with one drop of hydrochloric acid, and the addition of a particle of brucine gives in about five minutes a coloration varying from vermilion red to light yellow. It is possible thus to detect one part of nitrous nitrogen in 640,000 parts of water, but nitrates give no result under similar conditions. This test is claimed to be as sensitive as those of Griess, Tromsdorff, and Piccini, whilst more sensitive than those in the presence of sulphites and hyposulphites.—*Comptes rendus*, cxxiii., 590.

Columbin. Hilger describes this constituent of calumba root as crystallising in colourless needles, insoluble in hot or cold water, cold alcohol, or ether, but readily soluble in boiling ether or alcohol. Columbin melts at 182° C., is neutral, anhydrous, and has a composition represented by the formula, $C_{21}H_{24}O_7$. By the action of hydrochloric acid or dilute alkalies, columbin is converted into a monobasic acid. —*Zeitsch. österr. Apotheker*, v. 1896, No. 1.

Apiol from Dill Oil. Ciamician and Silber have extracted from dill oil a liquid apiol boiling at 285° C., which has the same composition as the crystallisable apiol from parsley oil ($C_{12}H_{14}O_4$), and differs from it only in structure. By reaction with sodium ethylate dill apiol yields a crystalline isoapiol, analogous to that obtained from the apiol of parsley, melting at 44° C. and boiling at 296° C.—*Berichte*, xxix., 1799.

Metallic Carbides. In a comprehensive memoir, Moissan points out that these compounds are all of very simple nature. The fact that many of them are decomposed by water with formation of hydrocarbons may furnish a clue to the origin of marsh gas exhalations, and also account for the production of petroleum. The possible application of compounds of this class for the production of cyanogen compounds, also offers an interesting field for investigation.—*Compt. rend.*, 122, 1462.

Stachydrin in the Leaves of Citrus vulgaris. E. Jahns reports that the leaves of the bitter orange contain, in addition to volatile oil, bitter substances, etc., several bases among which is a substance resembling betaine, that proved on examination to be identical with stachydrin obtained by von Planta and Schulze from the tubers of *Stachys tuberifera*.—*Berichte*, xxix., 2065.

Mydrol. This name is given to the iodo-methyl-phenyl-pyrazolon, obtained by Barbiano. It is a white inodorous powder of bitter taste, freely soluble in water or alcohol, and insoluble in ether. It reduces the pulse and causes dilatation of the pupil, is described as non-poisonous and not productive of disagreeable effects.—*Pharm. Cent.*, xxxvii., 718.

Arginine—$C_6H_{14}N_4O_2$. This base was obtained in the first instance by Hedin as one of the products resulting from the action of hydrochloric acid upon protein substances; it has since been detected in the blanched sprouts of *Lupinus luteus*, and is now found by Schulze to occur in the tubers and roots of various plants—*Brassica rapa*, *Helianthus tuberosus*, *Ptelea trifoliata*, etc.—*Berichte*, xxix., 352.

Ergot Bases. Keller describes a method of preparing the basic constituent of ergot, based upon the observation that it is extracted by simple treatment with ether, and is of opinion that ergot contains only one basic substance, the ergotinine of Tanret, the cornutine of Kobert, and the picrosklerotine of Dragendorff and Podwyssotski, being according to him identical or somewhat altered forms of the same substance. The sphacelotoxin or spasmotin of Jakoby is considered to owe its activity to the presence of some alkaloid. The production of an intense orange colour by the reaction of the ergot alkaloid with ferrichloride is considered to be very characteristic.—*Schweiz. Wochensch. f. Chemie und Pharm.*, xxxiv., 65.

Aiodin. This name is given as a trade mark to a preparation representing the active constituent of thyroid glands in the same state of combination as it exists naturally. It is a light powder without smell or taste, insoluble in water, and contains about 0·4 per cent. iodine. Aiodin is prepared by Hoffmann and Traube in Basle.

Ethylene-diamine-creosol. This compound was described by Dr. Baer at the Frankfurt Naturforscher meeting as being especially useful in the treatment of ulcerated wounds. It is a colourless liquid, which has the property of penetrating the skin very readily, and it is said to be but slightly poisonous.

Oxycamphor. A product of the oxidation of ordinary camphor, prepared by Dr. Manasse, of Munich, and recommended as useful for relieving difficulty of breathing. It is soluble in water, and is stated to have the composition represented by the formula $C_8H_{14}\begin{cases}CHOH\\|\\CO\end{cases}$ —*Pharm. Zeitung*, xli., 696.

Anusol is a preparation of the bismuth salt of iodo-resorcin-sulphonic acid, employed in the form of suppositories, for the treatment of piles.

Aseptolin, recommended by Dr. Edson for the treatment of tuberculosis, is stated by Langfeld to be a solution of a compound of pilocarpine and phenol.

Anti bacterin. Under this name Dr. V. Wachter describes a ferruginous preparation of boric ether used for inhalation. It is a greenish-yellow liquid. After inhaling it the expired air is seen to contain suspended fumes of boric acid.

Alcohol in Digestion. According to Drs. Chittenden and Mendel, alcohol taken in moderation at meal times does not retard proteid digestion, and may even facilitate it. In four out of nineteen experiments made with absolute alcohol, the digestive fluids being allowed to act upon various food substances under definite and constant conditions, the relative amount of digestive action was increased a fraction of one per cent., though in six cases there was a decrease in digestive action. The amount of alcohol present did not exceed one or two per cent., and if increased there was a decided decrease in digestive activity. Whisky, brandy, rum, and gin gave practically the same results, and the investigators draw the conclusion that "hence whisky can be considered to impede the solvent action of the gastric juice only when taken immoderately, and in intoxicating quantities." In so far as relates to the digestion of albumin, however, the report of the experiments is claimed by a medical critic to lend support to the idea that alcohol, in all the forms and doses in which it is commonly employed, is detrimental to the digestive process.—*Modern Medicine*, v., 196.

Gelanthum. In consequence of the limited success of unguentum caseini as a skin varnish, and at the suggestion of Professor Unna, a compound of tragacanth and gelatin has been experimented with by Dr. Paul Runge, of the Swan Apotheke in Hamburg, with some success. The tragacanth mucilage and gelatin solution are separately prepared, and mixed in a water bath, about 5 per cent. of glycerin added, and a minute quantity of thymol to prevent mouldiness. Gelanthum, when applied to the skin, forms a flexible adherent coating, and it has the advantage of being miscible with any of the substances used in the treatment of skin diseases.—*Pharm. Zeitung*, xli., 694.

Function of Lichen-Acids. In a paper in the *Biologisches Centralblatt* (1896, p. 593), Professor W. Zopf contests the theory of Tukal that the purpose of the acids contained in lichens is their protection against the attacks of animals, especially snails. The most destructive enemies of crustaceous and foliaceous lichens are not snails, but much smaller animals, *Poduridæ* and *Acarineæ*, and to these the acids in question appear to be perfectly innocuous. Professor Zopf has carried out a series of experiments in feeding snails on slices of potato soaked in artificially prepared lichen-acid, and has found that with the exception of vulpinic acid they did not prevent their consumption, and appeared to produce no injurious results on their consumers.

Anticoagulants and Immunity. Bosc and Delezenne claim to have proved that the imputrescibility of blood taken from animals after injection with an extract prepared from leeches, is due to an antiseptic power inherent in the extract (*Comp. rend.*, cxxiii., 465). Investigating the matter further they arrive at the conclusion that either leech extract or peptone is capable, when injected into the blood, of producing modifications which augment the resistance of the organism to infective agents. These modifications are characterised by a remarkable increase in the vitality and phagocytic properties of the white corpuscles, and in the bactericide power of the blood. The intravenous injection of these anticoagulant substances into rabbits and dogs, fifteen to forty-five minutes before the injection of coli bacillus or streptococcus, is said to confer upon those animals a real immunity, and even to act as a positive hindrance to experimental infection.—*Comptes rendus*, cxxiii., 500.

The Physiology of Germination is the subject of an elaborate paper in the *Landwirthschaftliche Jahrbücher* (xxv., 1896, pp. 385-452), in which Dr. J. Grüss advocates the theory that in the germination of seeds a diastase passes from cell to cell. By the use of a new reagent, guaiacum-hydrogen peroxide, he claims to be able to distinguish three different kinds of diastase—translocation diastases, secretion diastases, and glucase; cystase forming a doubtful fourth class. Dr. Grüss describes, under the name allöolysis, a peculiar change in the cell-wall, which is effected by the action of diastase; it can be well followed out in the date-seed. In the first stage of this process the ferment penetrates the cell-wall, this being usually followed by a transformation of the cellulose. The hydrolytic changes in the hemi-celluloses, which enter into the composition of the cell-wall, may be recognised by the following characters:—The refringency decreases, the cellulose becoming hyaline; the double refraction in polarised light is reduced; the behaviour towards staining reagents undergoes a change; the solubility on addition of acids is decidedly increased. In opposition to the statement of Meyer, Dr. Grüss asserts that neither diastase nor any other insoluble substance can penetrate into the interior of starch-grains. The destructive action appears to be exclusively a superficial one.

Arrest of Assimilation. Mr. A. J. Ewart has carried out a series of experiments on the power of arresting assimilation in green plants, exercised by certain agencies:—Dry and moist heat, cold, desiccation, partial asphyxiation, etherisation; treatment with acids, alkalies, and antipyrine; accumulation of the carbohydrate products of assimilation; immersion in very strong plasmolytic solutions, prolonged insolation, etc. He finds that if the cell remains living, the induced inability to assimilate is only temporary; the cell continuing to respire during the whole time of arrest. In the great majority of cases no visible change in the chlorophyll is associated with an arrest of assimilation. Cells in which the green colour of the chlorophyll is quite masked by the presence of a brown or reddish-brown pigment may exhibit a distinct power of assimilation. In certain cases isolated chlorophyll bodies may continue to assimilate for a short time after removal from the cell to which they belong.—*Journal Linnean Society*, "Botany," vol., xxxi., 1896.

Action of Salts on Vegetable Tissues. Ch. Dassonville has made a series of experiments on the effect on the growth of plants, chiefly lupin and rye, of Knop's salt, composed of 1 Gm. calcium nitrate, 0·25 Gm. potassium phosphate, 0·25 Gm. potassium nitrate, 0·25 Gm. magnesium sulphate, and a trace of ferric phosphate in 1 litre of water. He finds the use of the salt increases the number and size of the vessels, and retards their lignification. It determines the formation of a closed ring of xylem, both in the stem and in the root, whilst increasing the size of the cells of the pith and of the cortex. With regard to the influence on growth of the different salts, the magnesium sulphate appears at first to retard the development of the plant, but at later stages becomes indispensable. The nitrates of calcium and potassium are useful in the early stages, but appear to become inefficacious later. Potassium phosphate is absolutely indispensable to the plant.—*Bonnier's Rev. Gén. de Botanique*, 1896.

Displacement of Species. T. Kirk shows that the effects of introduced animals and plants upon the old fauna and flora of New Zealand go to prove the truth of Darwin's theory of the "survival of the fittest." Native plants have been unable to survive the changed conditions accompanying the advent of civilisation, and their places have been occupied by an army of encroaching weeds. Further, the invading army of plants has brought in its train a still more dangerous host of animals, those whose agency is most dreaded being members of the Invertebrata: the mussel scale, the black scale, and many others, together with numerous species of plant lice belonging to lowly-developed forms of Insecta. Higher in the scale are the Hessian fly, wireworm, turnip fly, and others, while numerous species of earthworms, molluscs, birds, and even mammals, affect alike both fauna and flora. More than five hundred plants have become naturalised in the colony, but it seems probable that the limit of encroachment is nearly reached, so far as introductions from Europe are concerned. There are numbers of "repeats" also, for out of one hundred and three species of plants recently introduced with ballast from Buenos Ayres, eighty-six were already naturalised in the colony. This paper hardly lends itself to abstraction, but is of the greatest possible interest.—*Journal of Botany*, xxxiv., 339.

Ochoco Nut. Some years ago the oil seed from the Gaboon known as "ochoco" was identified by J. Moeller as a species of *Dryobalanops* (Dingl., *Polytechn. Journ.*, 1880, p. 432). O. Warburg, who has recently had an opportunity of examining a similar seed from the Cameroons, but which was contained in the pericarp, has been enabled to identify the latter as the seed of a new myristicaceous plant belonging to the genus *Scyphocephalium*, and has named it *S. chrysothrix*. He has reason to think that the ochoco of the Gaboon is yielded by the nearly-allied species, *S. kombo*, Warb., which differs from the leaf in having a cordate base. Another oil seed from the Cameroons is identified by Warburg as the produce of a new species of *Cœlocaryon*, viz., *C. preussii* (Myristicaceæ). The name "kombo" is, he thinks, more correctly applied to the produce of *Pycnanthus microcephalus*, Warb., and *P. angolensis*, Warb., the former from St. Thomé, and the latter from the Gaboon. Ochoco seed is stated to contain 61 per cent. of a fat melting at 70°, and kombo seed 72 per cent.—*Cat. des Colonies Franc.*, 1867, p. 90.

False Kola. There has recently been sent into the London market from San Domingo, under the name of kola nuts, some large kidney-shaped seeds, about 2 to 2½ inches long, 1½ wide, and about ¾ to 1¼ inch thick, marked transversely with a deep narrow sinus. The seed consists of two cotyledons, is apparently leguminous, and resembles closely the seeds of *Dimorphandra* (*Mora*) *excelsa*. They are said to be used in the island as food for cattle. It is reported that some tons of the seeds are at present in London.

Juar. The Juar plant (*Andropogon sorghum*), used as fodder in the Punjaub, has been found to prove poisonous at certain times, usually when the plant becomes stunted and dried up owing to failure of the rains. Hitherto the poisonous action has been attributed by the natives to the presence of a fungus or of an insect. But a recent examination of the stems showed that the specimens which proved fatal contained in the stems, particularly at the nodes, a quantity of white crystals, which upon chemical analysis proved to be potassium nitrate to the extent of 75 grains per ounce weight of the plant. That this salt was the real cause of death was proved by administering 8 ounces of the salt in a drench, when the animal died in twenty minutes after administration, with the same symptoms (*Agricultural Ledger* (India) 1896, No. 26). This enormous secretion of potassium nitrate suggests the growth of the plant in dry climates, and in granitic or other suitable soil, as a source of the salt in a tolerably pure state, and with comparatively little trouble.

Structure of Alpine Plants. Herr W. v. Lazniewski points out ('Flora,' 1896, p. 24) that it is impossible to lay down any general laws respecting the biological adaptations of alpine plants to their surroundings, since the conditions in which they grow vary so greatly; and this is true even of alpine species of the same genus, as in *Saxifraga*. The author distinguishes the following general types of alpine plants:—(1) Plants with leaf-rosettes, often forming dense cushions, such as many Cruciferæ and Caryophyllaceæ, species of *Primula*, *Androsace*, *Saxifraga*, etc.; (2) Plants whose leaves are rolled up at the margins, *e.g.*, *Erica carnea*, *Azalea procumbens*, *Empetrum nigrum*; (3) Plants with deposits of mucilage in the mesophyll or epiderm of the leaves, which protect them against excessive transpiration; *Primula auricula*, *P. minima*, *Gentiana acaulis*, *G. imbricata*, etc.; (4) Plants with a more or less dense covering of hairs, *e.g.*, *Potentilla nitida*, *Leontopodium alpinum*, many species of *Gnaphalium*, *Artemisia*, *Achillea*, etc.; (5) Dwarf plants with woody prostrate stems applied closely to the ground, as *Azalea procumbens*, alpine species of *Salix*.

Digestibility of Coco-Nut Oil. The results of some experiments by Bourot and Jean on coco-nut oil deprived by pressure of the greater part of its soluble glycerides prove that, other things being equal, the digestibility of the vegetable butter thus prepared is equal to 98 per cent., as compared with that of cow's butter at 95·8 per cent. During the experiments the cow's butter regimen showed a greater tendency to disorder the system than that of the coco-nut butter, being accompanied by eructations and diarrhœa. The specimen of coco-nut oil used had been purified by a special process, and was termed "taline." It melted at 31°, and contained only 1·156 per cent. of soluble glycerides, whereas ordinary coco-nut oil melts at 23°, and contains about 7 per cent. of soluble glycerides.—*Comptes rendus*, cxxiii., 587.

Rapid Measuring Pipette. E. L. Smith publishes an illustrated description of a device for rapidly measuring and discharging a definite volume of liquid, which is claimed to possess advantages over a burette, as the necessity of repeatedly filling the tube is obviated, and there is but one mark to watch in making the measurement. A wide-mouthed bottle serves as the reservoir, and through the stopper of this passes a short tube to admit air and a siphon tube reaching to the bottom of the bottle. The short tube is expanded at its outer extremity, and the funnel-shaped opening is plugged with cotton-wool to filter the air. The siphon is connected, by means of a rubber connection provided with a pinch-cock, to a short glass tube, which, in turn, passes through a stopper inserted into the mouth of an ordinary test-tube. Through a hole blown in the side of the test-tube is passed a small glass siphon, which is fastened in place by means of a piece of rubber tubing, which just slips over the bent tube. On opening the pinch-cock, liquid from the reservoir enters the test-tube, and the shorter leg of the small siphon must be of such a length that 5 C.c. of liquid will be automatically discharged when the level of the liquid has reached a mark on a line with the top of the bend in the siphon tube.—*Journal of the American Chemical Society*, xviii., 905.

THE NEW MEXICAN PHARMACOPŒIA.

The present or third edition of the Mexican Pharmacopœia is a much more imposing volume than its predecessor, which was published twelve years ago. It is of larger size, is printed in larger type, and contains one hundred and eighty-six more pages. Like the last edition, it is arranged in two divisions, viz., the Introduction and the Pharmacopœia proper. The former consists of two parts, the first of which contains a series of tables, and the second the vegetable materia medica; the second division or Pharmacopœia properly so called, includes in the first part chemical products, and in the second pharmaceutical preparations. The first part of the Introduction comprises, besides those in the first edition, tables giving the metrical equivalents for Mexican measures of capacity, and metrical equivalents for all English weights and measures used in pharmacy, as well as of measures of length and tables for converting them; of the boiling points of various saline solutions; of the elements and their atomic weights; also tables taken from the United States Pharmacopœia for the volumetric analysis of pharmacopœial preparations, and directions for the preparation of volumetric test solutions, and for solutions of ordinary reagents; a table for diluting alcohol, and a list of antiseptics arranged according to their relative strength.

The second part of the Introduction contains forty-one new articles of vegetable materia medica. Bentham and Hooker's classification has been followed in the natural orders of the plants, as it is now generally adopted by botanists.

The additions are as follows:—

Ajccopaque	Gaultheria sp. nov.?	Leaves.
Amapola amarilla	Eschscholtzia californica	Herb.
Amor de hortelano	Galium mexicanum	Herb.
Bálsamo de guapilla	Hechtia glomerata / Hechtia argentea	Balsam.
Bejuco del Cóndor	Gonolobus condurango	Bark.
Boconia	Bocconia frutescens	Milky juice.
Cabalonga de Tabasco	Strychnos triplinervia	Seeds.
Cáñamo del Canadá	Apocynum cannabinum	Root.
Capomo	Brosimum alicastrum	Fruits and juice.
Cedrón de Oaxaca	Simaba cedron	Cotyledons.
Cola de Zorra	Cheilanthes elegans, or Cheilanthes myriophylla	Herb.
Contrahierba blanco	Psoralea pentaphylla	Root.
Cozticpatli	Thalictrum hernandezii	Root.
Espantavaqueros	Ipomœa stans	Root.
Estrofanto	Strophanthus hispidus, var. Kombe	Seeds.
Flor de tuna	Opuntia tuna	Flowers.
Floripondio	Datura arborea	Leaves.
Haba de San Antonio	Cæsalpinia bonducella	Seeds.
Huele de noche	Cestrum nocturnum	Leaves and fruits.
Jicamilla	Jatropha purgans	Root.
Manzanillo	Hippomane mancinella	Seeds.
Mostacilla	Eruca sativa	Herb and seeds.
Nuez de Kola	Cola acuminata	Seeds.
Nurite	Calamintha macrostema	—
Palillo	Croton morifolius, var. sphærocarpus	—
Pañete	Plumbago pulchella	Herb.
Paraíso	Melia azedarach	Root bark.
Polvo de Goa	Andira araroba	Chrysarobin.
Raíz del oso	Valeriana ceratophylla	Rhizome.
Retama de escobas	Spartium junceum	—
Rosa laurel	Nerium oleander	Leaves.
Siegesbequia	Siegesbeckia orientalis	Herb.
Tabaquilla oloroso	Hedeoma piperita	Herb.
Telondilla	Jatropha spathulata	Rhizome.
Tencuanete	Euphorbia calyculata	Oil of seeds and milky juice.
Tlalocopetate	Coriaria atropurpurea	Herb.
Tuya	Thuja occidentalis	Twigs.
Vaselina solida	Vaseline solid	
Vaselina liquida	,, liquid	
Viburno	Viburnum prunifolium	Bark of root and stem.
Xochipipile	Lobelia laxiflora, var. angustifolia	Herb.

The materia medica portion appears to be chiefly the work of one of the Pharmaceutical Society's corresponding members, Professor A. Herrera, and of A. L. Herrera. It really possesses the character of a work on materia medica. The native synonyms, natural order, habitat, part used, physical characters of the drug, its principal adulterants and substitutions are given, as well as a summary of the principal chemical constituents, the physiological action, therapeutic uses and doses. It therefore carries out in practice the idea that some medical men have suggested for adoption in our own Pharmacopœia.

The following particulars of the vegetable remedies now added to the Mexican Pharmacopœia may be placed on record here:—

AJOCOPAQUE, also spelt Axocopaque.—The leaves belong to an unidentified species of *Gaultheria*, which however possess the odour of winter-green. They are said to be diuretic, laxative, vermicidal, and antirheumatic.

AMAPOLA AMARILLA.—The *Eschscholtzia californica* is credited with soporific and anodyne properties. Protopine, one of the alkaloids extracted from the plant by Reuter, has properties analogous to morphine.

AMOR DE HORTELANO.—*Galium mexicanum* is said to possess diuretic properties, to allay the pain of cancer, and to lessen obesity.

BALSAMO DE GUAPILLA. — This is a yellowish-green solid softening in the hand and melting at 72° C., giving off when burnt an odour of benzoin. It is said to yield 5·733 per cent. of benzoic acid. The balsam is obtained by bending and rubbing the leaves, at the base of which it forms a varnish. The base of the leaves contains a good deal of starch, and is edible. The decoction of the leaves is used in chronic bronchitis. Two species of *Hechtia* yield the balsamic resin. The occurrence of benzoic acid in Bromeliaceæ, to which these plants belong, is interesting, as indicating a chemical relationship to the Palmaceæ. In the genus *Hechtia*, moreover, the flowers are dicœcious, an unusual feature in the Bromeliaceæ.

BOCONIA.—This drug is mentioned in the Appendix on page 507. It is said to contain an active principle resembling sanguinarine.

CABALONGA DE TABASCO.—The seeds of *Strychnos triplinervia* are used like St. Ignatius' bean, and are said to contain 1·83 of strychnine and brucine. The seeds are smaller than those of *Strychnos ignatii*, which they resemble in form, the largest being only 1½ Cm. long by 1 Cm. in diameter.

CANAMO DEL CANADA.—*Apocynum cannabinum* is stated to possess purgative and emetic properties, and to act as a cardiac tonic; it is apparently used as a substitute for digitalis, since it is stated that apocinein resembles that drug in its action, whilst apocinin is a heart poison.

CAPOMO.—The fruits of *Brosimum alicastrum* (Urticaceæ) are used as a galactogogue, and the milky juice as a sedative in asthma.

CEDRON DE OAXACA.—The cotyledons of *Simaba cedron* (Simarubaceæ) are used as a tonic and antiperiodic. By some oversight Rutaceæ is given as the natural order of the plant. It should be noted that *Cedron* is *Lippia citriodora*, and *Cedro colorado* is *Cedrela mexicana*.

COLA DE ZORRA.—The concentrated infusion of the ferns *Cheilanthus elegans* and *Ch. myriophylla*, is used for the relief of chorea.

CONTRAHIERBA BLANCO.—The tuberous root of *Psoralea pentaphylla* (Leguminosæ) is employed as an antiperiodic. It appears to owe its properties to an acid resin and an essential oil. It must not be confounded with Contrahierba, which is the rhizome of *Dorstenia contrajerva* (Urticaceæ), and which is used as a stimulant, tonic, and diaphoretic.

COZTICPATLI.—The root of *Thalictrum mexicanum* is used in eye disease by the Aztecs, and also as a diuretic.

ESPANTAVAQUEROS.—The tuberous root of *Ipomœa stans* is used in hysteria and epilepsy. It possesses emetic and cathartic properties.

(*To be continued.*)

SOLUBILITY OF THE DOUBLE CYANIDE OF ZINC AND MERCURY.*

BY PROSPER H. MARSDEN, F.C.S.,

Dispenser to the Royal Infirmary, Lecturer on Pharmacy and Demonstrator in Materia Medica to University College, Liverpool.

A case of mercurialism, resulting from the use of cyanide gauze as a dressing, was reported by Mr. W. Thelwall Thomas, F.R.C.S., Assistant Honorary Surgeon, Royal Infirmary, Liverpool; Demonstrator of Surgery, University College, in the *Liverpool Medico-Chirurgical Journal*, July, 1895.

This case was an excision of carbuncle in a woman of 52 years of age, admitted in the previous year to the Royal Infirmary. After the operation the aperture formed, 9 inches by 5½ inches, was dressed with sponges enclosed in cyanide gauze under a large piece of wood-wool tissue. The patient went on well till the third day, when suppuration was found to have taken place; the sinus formed was cleaned out with 1 in 20 carbolic lotion, and packed with cyanide, and over a layer of this gauze a large bran poultice, well sprinkled with borax, was applied.

This treatment was continued, and on the tenth day her temperature rose to 102°. Upon examination, the patient's mouth was found to be ulcerated, and she had well-marked suppurative inflammation of the gums, and on the eleventh day profuse salivation set in. This was clearly a case of mercurialism following the use of the gauze, as no other mercurial of any kind had been in contact with her.

Mr. J. R. Johnson at that time made some experiments showing that the cyanide was "one-quarter more soluble in hot solution of borax than in water," and that "cyanide salt is one-quarter its weight soluble in hot borax solution."

At the instance of Mr. Thomas, experiments were undertaken by myself with a view of confirming the above result, and of extending our knowledge of the solubility of the cyanide, the solvents employed being water, borax solution, and carbolic lotion, at various temperatures, with the following results :—

WATER AT NORMAL TEMPERATURE.

First Experiment.—1·00 gramme of the "cyanide" was washed with ten 15 C.c. quantities of water at 60° F., the residue was dried, and found to weigh ·967, that is to say that 1 gramme of cyanide had lost ·033, dissolved in the water, corresponding with a percentage loss of 3·3.

Second Experiment.—1·00 gramme of cyanide was macerated in 100 C.c. water at 60° F. during twenty-four hours with frequent agitation; the residue, upon filtering and drying, was found to weigh ·960, showing thus a loss of ·040 on 1 gramme, or a percentage of 4.

The average of these two experiments shows 3·65 per cent. as the amount dissolved out by water at normal temperature.

HEAT WATER.

First Experiment.—One gramme of cyanide was washed with ten 15 C.c. quantities of water maintained at a temperature of 180° F. (this temperature was employed as it is stated to be that at which the poultices were applied in the above case). After drying, the residue was found to weigh ·928, a loss of ·072 on 1 gramme, or a percentage of 7·2.

Second Experiment.—One gramme of cyanide was digested for two hours at a temperature of 170° F. with 100 C.c. water and filtered. The dried residue was found to weigh ·932, a loss of ·068 on 1 gramme, or a percentage loss of 6·8.

Average of two experiments shows that 7 per cent. of the cyanide is dissolved out by hot water.

Third Experiment (Sir Joseph Lister's method).—One decigramme of the cyanide was diffused in distilled water, and made up to 1 litre (a mortar being used for the diffusion which had been previously well washed with hydrochloric acid and distilled water). An apparatus was used which consists of a large flask having a thermometer dipping into the liquid contained therein, this flask being placed in a cylindrical copper vessel having two tubulures at the side. Water was passed into the copper vessel by the lower tubulure and out (above the level of the liquid in the flask) at the upper.

The temperature was carefully maintained between 100° and 110° F. for three and a half hours by means of a hot and a cold water tap, connected by a T piece with the copper vessel. The liquid in the flask was then filtered warm, and as it cooled through a tared filter, the residue and filter were dried in a desiccator during eighty-four hours, after which they weighed ·625 less, ·587 (weight of filter) = ·038, corresponding to a loss of ·062 on a decigramme, or 62 per cent., operating with a larger volume of water and a smaller amount of cyanide than in previous experiments.

Borax Solution.—Mr. Johnson took 1 gramme of cyanide, 1 gramme of borax, with about 30 C.c. of water and digested them at a temperature of 180°. Upon weighing the residue it was found that 25 and 27 per cent. had been dissolved in two experiments.

The writer took 1 gramme with 1 of borax and 30 C.c. of water and digested at 170° for two hours; the liquid was filtered and washed with cold water, and the dried residue showed a loss of 26·3 per cent. dissolved out by borax solution at 170° F.

Carbolic Lotion.—At the suggestion of Mr. Thomas that the carbolic lotion used with the dressing might have some influence on the cyanide solubility, 1 gramme of cyanide was digested during two hours with 100 C.c. of carbolic lotion (1 in 20) at a temperature of 170° F., filtered and washed till the washings ceased to react with neutral solution of ferric chloride, dried and weighed. The weight, ·891, showed a loss of ·109 on 1 gramme, or 10·9 per cent. dissolved out by the carbolic lotion.

Upon the presentation of my report on "Cyanide Solubility," Sir Joseph Lister took 1 grain of cyanide thoroughly diffused in 2000 grains of 1 in 20 carbolic lotion, and digested at 105° F. for three and a half hours. At the end of that time about four-fifths of the supernatant liquid was poured off, the vessel filled up with distilled water, and allowed to stand all night. On filtration the residue was found to weigh ·6 grain, corresponding with a loss of ·4 on 1 grain, or 40 per cent.

Four-fifths which had been poured off weighed 1680 grains at 60° F., and had deposited ·08 grain on cooling to 60° F.

Sir Joseph Lister's experiment was repeated (in the apparatus figured and described above) taking two decigrammes of cyanide and diffusing in 1 litre of carbolic lotion 1 in 20. The residue was found to weigh ·102, showing a loss of ·098 on two decigrammes, or 49 per cent. dissolved out by carbolic lotion.

Professor Wyndham R. Dunstan, F.R.S., in a number of experiments undertaken in 1889-90 in the Research Laboratory of the Pharmaceutical Society, showed that the double cyanide consists of about 36 per cent. at most of mercuric cyanide occluded in zinc cyanide.*

In a later paper† the present Director of the Research Laboratory of the Imperial Institute showed that the maximum quantity of mercuric cyanide "retained" by the zinc cyanide was 38·5 per cent. (which corresponds very nearly with the proportion of salt dissolved out by Sir Joseph Lister). He adds that "Prolonged contact with cold water leads to the gradual removal

* Read before the Liverpool Chemists' Association.

* *Pharm. Journ.*, February 15, 1890, pp. 157 *et seq.*

† *Pharm. Journ.*, March 19, 1892, p. 769.

of mercuric cyanide. Boiling water dissolves the mercuric cyanide more rapidly," and "a series of experiments in which the mass of the reacting salts (used in the manufacture of the cyanide) was varied, proved that a true chemical compound is formed and suffers decomposition to a greater or less extent, depending upon the relative amount of water present." This will account for the discrepancies in the following table marked 4, 5, and 8, and 6 and 9.

Summary of Results.

Menstrua.	Vol. of menstruum.	Time. Hrs.	Temp. ° F.	Weight of cyanide taken.	Weight after treatment.	Loss of weight.	Per cent. dis. by menstruum.
Borax Solution.				Gram.	Gram.		
1. Johnson, 1894 ..	Abt. 30 C.c.	?	180	1·00	·75	·25	25
2. Marsden, 1896 ..	30 C.c.	2	170	1·00	·737	·263	26·3
Water.							
3	150 C.c.	24	60	1·00	·967	·033	3·65
4	100 C.c.	24	60	1·00	·960	040	
5	150 C.c.	?	180	1·00	·928	·072	7
6	100 C.c.	2	170	1·00	·932	·068	
7. Lister's method..	1000 C.c.	3½	100-110	0·10	·038	·062	62
Carbolic Lotion, 1–20.							
8	100 C.c.	2	170	1·00	·891	·109	10·9
9. Lister's method..	1000 C.c.	3½	100-110	0·20	·102	·098	49
	Weight				Grain	Grain	
10. Sir J. Lister	2000 grs.	3½	105	1 grain	·60	·40	40

The object of this communication is to show that the double cyanide of mercury and zinc is soluble to some extent in all the menstrua above mentioned, and particularly so in solution of borax.

I have to thank Sir Joseph Lister for permission to publish his experiments; Mr. Thomas and Mr. Johnson for suggestions and help in the course of the above experiments.

MEDICINE AND PHARMACY.*

BY PROFESSOR CRUM BROWN.

There is not in modern English any one word to indicate a member of the medical profession. It was not always so, there is an excellent old English word—"leech"—which at one time corresponded exactly with the French "médecin" or the German "Arzt." Applied at first no doubt in a sort of joke to a humble assistant it had come to be practically restricted to its secondary meaning, so that it sounds both familiar and contemptuous for any one now to call a medical man a "leech." Possibly the loss of the common name in English had some relation to the loss, more marked in England than anywhere else, of the sense of a common profession. Hood has told us that—

> "In many a little country place
> It is a very common case
> To have but one residing doctor,
> Whose practice rather seems to be
> No practice but a rule of three,
> Physician, surgeon, drug-decocter."

To him and no doubt to most Englishmen of that time the unity of the healing art depended on the small size and poverty of the place where it was exercised, just as he might have said that in such a small out-of-the-way place the merchant sold nails and hats and soap and bacon. The work of the physician and that of the surgeon seem to have been regarded as distinct from each other, just as the work of the tailor and the shoemaker. It is possible without difficulty to draw the line between the respective spheres of the tailor and shoemaker, and the one artificer can do his work quite well, although he may be wholly ignorant of the craft of the other. But we cannot draw a line between any two branches of the healing art. No doubt fevers belong to the physician and fractures to the surgeon, but between such extremes there lie a vast number of disorders which cannot well be treated without both kinds of knowledge and skill. "The body is one and hath many members, and if one member suffer, all the members suffer with it." And as there is to be no schism in the body so there should be no schism in the profession which looks after the health of the body.

But in England something like a schism in the profession has taken place. Although it had been declared by Act of Parliament, in connection with the College of Physicians, that surgery was a part of physick, it came to pass that the College of Physicians would not admit to their body a surgeon, however eminent he might be in what was called pure medicine, unless he resigned all connection with surgery. And the College of Surgeons, although their charter included medicine, received as members men who had not for anything the College knew studied medicine or midwifery at all, and examined in anatomy and surgery only with perhaps a few questions on physiology and pathology. This sufficiently explained Hood's "physician and surgeon." His "drug decocter" was of course the apothecary. This word, literally keeper of a storehouse, early came to be restricted to the seller of drugs. Very naturally the seller of drugs began to tell his customers what to do with them, and thus gradually usurped medical duties and privileges. Pope, in his essay on Criticism, published in 1711, wrote:—

> "Modern 'pothecaries, taught the art
> By doctors' bills to play the doctor's part,
> Bold in the practice of mistaken rules,
> Prescribe, apply, and call their masters fools."

The position thus gradually assumed was contested by physicians and surgeons, but was declared legal by the House of Lords in 1703, and in 1815 the Apothecaries' Society obtained by Act of Parliament the right of examining and licensing candidates who have gone through a course of medical education approved by the Society. After that time the majority of the general practitioners of England practised with licences in medicine from the Apothecaries' Society, and in surgery from the Royal College of Surgeons of London (afterwards of England), or with the surgical diploma only. But it is not to be supposed that our brethren in England were really divided into separate professions as their formal classification seemed to indicate. Whatever their titles may have been, the English general practitioners of the last generation were able to acquire, and did acquire, a sound practical knowledge of all branches of their profession, and anomalous as the system was, it produced a great deal of good fruit. The Medical Act of 1858, and the General Medical Council which the Act created, had put an end to partial qualifications, and the unity of the profession was as fully recognised in England as in any part of the world. The old names survived with, perhaps, some trace of the old ideas.

The title of "apothecary," or member of the Apothecaries' Society, rather more than suggests the "drug decocter." Undoubtedly in "little country places" the medical man must often make up his own prescriptions. There may be no druggist near him, and even if there be, if he has to ride ten miles to see his patient he can hardly expect that his patient will always be able to send ten miles for his medicine. But many a medical man makes up his own medicines without so good an excuse. It is a pity that his time should be taken up with work which is the business of another profession, and could be done more easily and better by the pharmacist having trained skill. In case of necessity an intelligent man can turn his hand to anything, and if the necessity continue, can learn to do it very efficiently, but when an expert is to be had it is better to let him do the

* From the Inaugural Address to the Edinburgh Royal Medical Society.

work. It is not because they like it that many general practitioners thus add unnecessarily, as they would say, to their work. It is because their patients will have it so. If they abandon their pharmacy their practice is not unlikely to abandon them. We can only hope that as the public has learnt, or is learning, that the medical profession is one, so they may gradually find out that the pharmaceutical profession is another. We may then hope that each of them, really distinct professions, will restrict itself to its own duties. Things are indeed better now than they were. Respectable skilful men were to be found not so very long ago who kept real shops, where they or their assistants sold across the counter, not to their own patients only but to anybody, not only medicine, but tooth-brushes, sponges, scented soap, and so on. The unity of the medical profession is indeed securing its distinctness, and the consciousness of unity is raising its position and its tone.

BEESWAX ANALYSIS.*

BY R. GLODE GUYER.

Wax analysis is not difficult, though unfortunately somewhat tedious, since no single test is available by which you are able to say that it is pure beeswax.

Beeswax is an important pharmaceutical substance and also is extensively used in the arts. On October 1 there were 2058 packages of wax warehoused in London alone.

Lately the inspectors under the "Food and Drug Act" have taken a cousiderable interest in it, and the consequence is that many chemists have had to appear before the public in the most unenviable position of "40*s.* and costs."

C. and D.,	March 30, '95.	Yellow wax, 60; paraffin, 40. White wax, 75; paraffin, 20.	Fined 10*s.* each case and costs.
,,	Jan. 10, '95.	White wax, 30; paraffin, 70.	Dismissed.
,,	Feb. 23, '96.	Yellow wax, 60; paraffin and resin, 40.	Dismissed.
,,	Feb. 12, '95.	Yellow wax, 40; paraffin, 60.	Dismissed.
,,	Jan. 24, '96.	Wax, 50; paraffin, 50.	Fined 10*s.* and costs, £1 18*s.* 8*d.*
,,	Jan. 28, '96.	Wax, 50; paraffin, 50.	Fined 1*s.* and costs, 13*s.*
,,	Feb. 13, '96.	White wax, 62; paraffin, 38.	Fined £2; costs, £2 2*s.*
,,	April 25, '96.	Wax, 20; paraffin, 80.	Dismissed.

Beeswax has, like that closely allied class of substances, the fixed oils, been the successful subject of the adulterator. Formerly it was largely adulterated with simple substances, such as flour, earthy matter, ferric oxide, etc. These still can often be found in wax, but are due as a rule to imperfect collection, and not as adulterations and make-weights. For the purpose of adulterating wax these obviously apparent admixtures have been supplanted to a large extent by use of other waxes so closely allied to the true beeswax that it now requires a careful and accurate analysis to detect them, identification often being impossible.

To catalogue the various possible and probable adulterants would be unnecessary in the present case, for they are both various and numerous; therefore we will consider analytically what beeswax should be and the way by which its purity can be ascertained, and then how to determine the presence of a few of the commonest adulterants.

The Melting Point.—Different methods for the determination of this most important factor have from time to time been described, often one only being a modification of another.

The Pharmacopœial method is naturally one which comes before us most prominently; the details given in the B.P. are familiar to all, and therefore need no explanation. The B.P., however, does not describe it quite accurately enough, for no mention is made of the fact that the melting point should not be determined until some hours have elapsed after the wax has been drawn into the capillary tube. This is a most important detail, for recently-melted wax will re-melt at a much lower temperature, and consequently you will obtain a lower result than is really the case.

The best way to determine this point by the capillary tube process is to work upon the lines indicated by the Hungarian Society of Analysts. They direct that the wax should be drawn up into a long capillary glass tube; seal the lower end, and attach it to the bulb of the thermometer in the usual way, so that the column of wax corresponds to the bulb of mercury. After twenty-four hours place the thermometer into a glass test-tube filled with glycerin and heat very gradually.

By observing details like these in such a test the results are sure to be more reliable and comparable.

Pohl's process is a simple one, and yields very concordant results. The bulb of the thermometer is dipped into melted wax so as to obtain a film of wax, then the instrument is fixed in a long clear glass test-tube. After allowing the wax to become properly "set," which generally requires at least six hours, heat gradually by holding the tube containing the thermometer over a thick iron plate heated in the usual manner. The moment the wax forms a drop on the end of the bulb of the thermometer note the temperature, which is the melting point.

Redwood proposes a modification of this method. Instead of placing the wax on the thermometer he lets melted wax (a small quantity) fall upon some mercury contained in a dish to which is attached a thermometer, apply heat gradually, and the moment the wax disperses as a film observe the temperature, which is the melting point.

Bunsemann's process (*Journ. Soc. Chem. Ind.*, 1885, 535) is a useful one for very exact determination. He employs a thin glass tube with a small bulb blown in the centre and drawn down to a fine capillary tube at the end. The *modus operandi* is to place in the bulb portion of the tube a small fragment of wax and warm so that it adheres to the side of the bulb. After allowing time for the wax to completely "set," attach to a thermometer, and apply heat in the usual manner. The moment the wax begins to leave the sides note the temperature, which Bunsemann calls the "incipient fusion point." Continue to heat until the wax reaches and commences to enter the capillary tube; this he calls "complete fusion point."

This process is only necessary for very exact determinations. Of these four processes for the determination of this important factor, the B.P. one ought to be used for all pharmaceutical purposes, but for convenience and accuracy Pohl's method is most excellent, especially for "counter" analysis, since there is no trouble in drawing out a capillary tube, neither does the actual operation involve so much labour, as there is none of that continual stirring to get rid of air bubbles like there is when using the B.P. process.

*Maumene's Test.**—This test is a caloric one, and depends on the rise of the temperature which occurs on adding strong sulphuric acid to wax. Much work has been done in this direction, especially with the fixed oils, but at present it is not sufficiently developed to be reliable enough for wax. The discrepancies between the results of various observers is very great, and therefore is beyond the scope of this paper.

Specific Gravity.—For the determination of this essential point there are many various processes employed, but the majority of them depend on the use of special apparatus, generally of a most costly description, so there is no need to refer to them. On the other hand, there are several useful and accurate methods which can be employed without the expense of such appliances; two of these are most important.

* Read at a meeting of the Chemists' Assistants' Association,

* *Analyst*, 1881, p. 102.

1st. The process generally given in all text-books on physics for the determination of the specific gravity of a solid lighter than but insoluble in water. This is too well known to need any explanation.

2nd. Hager's Process.—The essential feature of this method is to find the specific gravity of the liquid in which the wax will remain suspended in equilibrium.

The method of working this process is a simple one. Melt the wax gently and allow it to fall from a moderate height into some alcohol, 70 per cent. With practice a large number of beads of wax are formed. These, after allowing time for contraction to occur, are placed in some previously diluted alcohol. To this either a stronger or weaker alcohol is added until the beads are suspended in equilibrum at 15°·5 C.

It is essential that the beads should be fully contracted, for from Dieterich's experiments it is shown that a very considerable error may arise by using the wax too soon after it has melted.

Recently-made pearls	0·961*
Twenty-four hours old pearls	0 964

In consequence of this possible error, Chattaway and Allen† prefer to cut the wax into small cubes and brush them over with a wet brush before immersion, to prevent the adhesion of air bubbles.

The specific gravity of the wax is therefore the specific gravity of this liquid, which can be determined in the usual manner.

It is essential that the temperature is 15°·5 C., and that if the globules of wax are used they should not be immersed until they are fully contracted.

The alcohol should be diluted beforehand so that the air is expelled from the solution. It is convenient to have three strengths of alcohol, of specific gravity 0 975, 0 965, and 0·955 respectively. Place the beads in No. 2 first, and then add gradually No. 1 or No. 3, whichever is necessary, until they are suspended in equilibrium.

Solubility.—The solubility of a wax should also be taken into consideration. It is soluble in ether at 22° C. Insoluble in cold but completely soluble in boiling alcohol. Chloroform dissolves out about 25 per cent. in the cold, but completely dissolves it when hot.

Chemical Tests.

Determination of the Free Acids.—Beeswax contains cerotic acid, which is soluble in boiling alcohol, and is capable of being neutralised by an alkali. Advantage of this fact is taken by analysts in determining the purity of wax, since about 12 to 16 per cent. of cerotic acid is invariably present. If the wax was always pure it would be a simple matter to calculate the amount of this acid, but as it is so frequently adulterated with other substances containing a free acid, the result of this test is generally referred to as the number of milligrammes of KOH necessary to neutralise the free acids in one gramme of wax. This is called "the free acid value."

Method of Operation.—For the determination of this factor operate upon 5 to 10 grammes of the wax, boil with about 50 C.c. to 100 C.c. of alcohol for a few minutes until thoroughly melted. Whilst still hot, titrate with standard alkali until neutralised, using phenolphthalein as the indicator. The solution of wax should be kept hot while titrating, since on cooling the cerotic acid will crystallise out. In practice it will be found more convenient to use $\frac{KOH}{4}$ rather than the normal solution. Some authorities advocate using an alcoholic potash, but this is immaterial.‡

Saponification Value (*Koettstorfer's Number*).—The second of the great chemical tests for wax is the saponification value, which is—the measure of the amount of alkali—KOH—required to completely saponify the whole of the wax. In the previous case only the acid soluble in hot alcohol was estimated, but in this case the insoluble portion—myricin—is also estimated. The ester myricin or myricin-palmitate is not saponified by an aqueous solution of potash, the reaction only occurring in alcoholic solution.

The outline of the process is as follows:—Take a carefully weighed and averaged sample of wax of about 10 grammes, and place in a flask of about 500 C.c. capacity, and add to it 50 C.c. of $\frac{KOH}{N}$ alcoholic, attach a reflux condenser and boil briskly for several hours; when completely saponified titrate back with $\frac{HCl}{N}$, using phenolphthalein as the indicator. The temperature should be maintained whilst titrating. By deduction the amount of alkali solution used to saponify the wax is obtained. In practice it is advisable to work on a "blank" analysis, simultaneously treating exactly the same amount of alcoholic alkali for the same time on the bath and titrating with the same acid. By working in this manner there is no occasion to standardise the alkali, the titer of which, being alcoholic, is apt to vary.

It is obvious that the difference in the amount of acid solution used is equivalent to the amount of alkali consumed by the wax, from which the number of milligrammes of KOH used to saponify 1 gramme of the wax can be readily calculated. The following tables are based on those of Lewkowitsch:—

Substance.	Melting point.	Sp. gr.	Acid value.	Ester value.	Saponification value.	Ratio of 1 & 2	Iodine value.	Bromine value.
	Deg. C.	15 C.	Mm. gr.	KOH	Per gr.			
Beeswax	63°	·963 ·966	16 5-20°	71·8-75	87·8-96·7	3·75	—	—
Carnaüba wax	83°-84°	0·990	4	75	79	—	13·5	33·50
Japan wax	51°	0·977	20	200	220	10	4	—
Paraffin wax ..	52°-55°	·903	0	0	0	0	—	—
Ceresin	61°-78°	·918-·921	0	0	0	0	—	—
Stearic acid	69°	·969	195	0	195	0	—	—
Spermaceti	43°·5-49°	·960	0	128	128	—	108	—

Variety.	M. P.	Observer.	Sp. gr.	Observer.	Milligrammes KOH per gramme of wax.			Observer.
					Acid.	Ester.	Sapon.	
Yellow wax	62-62·5	Schaedler	965	Hager	20	75	95	Hubl
	64	Lepage	975	Hager	16·8	71·8	87·8	Dieterich
	63	Allen	956-964	Röttger	20·1	75·6	96·2	
	62	Thorpe's	963-966	Dieterich	19·02			Buisine
	64	'Dict.'	963	Allen	20·6			
			960-963	Thorpe				
	63-64	Buisine			19	10	91	Buisine
					21	11	95	
White wax	69-70	Lepage	964	Dieterich	18·6	71·8	90·4	Dieterich
	65	Barford	968	Dieterich		72·8	91·4	
	63-64	Schaedler	973	Schaedler				
	63·5-64				21·23		105 115	Buisine

Ester Values.

The ester value indicates the number of milligrammes of $\frac{KOH}{N}$ required to saponify the neutral esters in one gramme of wax. In obtaining the acid value that portion of wax soluble in hot alcohol was estimated—cerotic acid. In obtaining the saponification value the insoluble as well as the soluble bodies were conjointly estimated—cerotic acid and myricin—provided, that is, the wax was pure. It is evident, therefore, that the ester value is the difference between the acid value and the saponification value, or, in other words, the saponification value is the sum of the acid and ester values.

In practice the easiest way to obtain these figures is to first ascertain the acid value, and then add the alcoholic alkali and

* Dieterich, *Pharm. Journ.* [3], x., 1887.
† *Analyst*, December, 1886. ‡ Lewkowitsch.

proceed as described under saponification value. Then the amount of alcoholic KOH used corresponds to the ester value, and the total alkali, both aqueous and alcoholic, is necessarily the saponification value.

Thus, these three very important figures can be obtained by one operation. If it is thought desirable to check these figures the saponification value can be taken, though, as a rule, with careful work this is not necessary.

Iodine and Bromine Numbers.

Whether pure beeswax does absorb any appreciable quantit of the halogens is somewhat a doubtful point. Most of the great workers on this subject do not refer to this test, whilst a few give a very low and variable figure, that may I think be disregarded. These tests are most valuable when regarded from a negative standpoint. Pure beeswax we may take for granted absorbs little iodine and bromine, whilst on the other hand several of its most frequent adulterants do absorb a large amount, more especially carnaüba wax and tallow.

The *modus operandi* is not very difficult; it consists of treating wax with a solution of iodine in alcohol (Hubl's solution, 25 grammes of iodine, 30 grammes mercuric chloride in one litre of alcohol). Allow the wax to remain in the solution for four hours with frequent agitation. Then titrate with decinormal solution of sodium thiosulphate and calculate the percentage of the iodine absorbed. The bromine number is obtained in a similar manner.

Having thus briefly glanced at the six great tests for the purity of wax, we will consider briefly those tests which are used to show the absence or presence of certain definite and possible adulterants.

Stearic Acid.—The first to be noticed is the detection and estimation of stearic acid. This substance is detected somewhat readily. It tends to raise the melting point—stearic acid melting point, 69°·2 C.—but it demands further observation to be sure of its presence. If no compensating element has been added it may be noticed by the acid's value, which will be correspondingly high.

earic acid = 197 A.V.

Röttger* advocates boiling the suspected sample in strong alcohol, and filtering when cold, and to the filtrate adding equal volume of water. Pure wax will produce a clear mixture, but stearic acid is a cloudy one, and if much be present a flocculent precipitate.

If a solution of calcium hydrate or chloride is added a granular precipitate of the stearate will be formed. Jean† proposes to estimate the acid by titrating the filtrate with a standard alkali, $\frac{KOH}{2}$

The above methods are valueless in the presence of resin; heating the wax with an aqueous solution of an alkali, filtering, and neutralising the excess of alkali with an acid as advocated by the B.P. is eminently satisfactory, but not so readily adaptable to quantitative work as the other tests.

Resin is frequently referred to by the authorities on this subject as a favourite adulterant, but as far as my experience teaches me it is not generally used at the present time, except in prepared waxes for technical purposes. Like stearic acid it is apt to alter the specific gravity, making it considerably higher. Resin specific gravity = 1·045, 1·108, Lewkowitsch. It also gives a higher acid value unless compensated. If suspected it can be isolated conveniently by boiling the wax in 50 per cent. alcohol; filtering when cold, and evaporating the filtrate to dryness, and weighing the product. By using weak alcohol, stearic acid is not extracted.

(To be continued.)

* Röttger, *Journal Soc. Chem. Indust.*, 1890, 771.
† Jean, *Journal Soc. Chem. Industry*, 1891, 728.

REVIEWS AND NOTICES OF BOOKS.

Chemische Rundschau: Zeitschrift für die gesammte chemische Industrie. Edited by Dr. Franz Peters. Berlin: October, 1896.

Under this title the first number of a new journal has been issued, intended to furnish chemists with a review of the work done in relation to the applications of chemistry. The journal will be published at intervals of two weeks, and the subject matter will be arranged under twelve heads, according to the particular branch of industry to which it relates.

The editor requests authors of papers, etc., to supply him with separate copies, and he also asks for assistance in the form of suggestions as to making the journal generally useful. The first number contains, in addition to abstracts from scientific journals, an interesting article on the Welsbach patent litigation by Dr. George Döllner, another on the preparation of alizarine, by Dr. Werner Heffter, and a third on electrolytic analysis, by Dr. Max Engels.

Berichte über die pharmakognostische Litteratur aller Länder.

The German Pharmaceutical Society in Berlin has undertaken the production of a periodical report upon the investigation of subjects connected with pharmacognosy and economic botany carried out in various parts of the world, and the first report of the series has recently been published. The undertaking is one involving considerable labour, and the promoters of it may be congratulated that they have succeeded in obtaining such valuable support in the execution of the work to be done, as the present report bears evidence of. Upwards of a hundred memoirs are here dealt with, and the general features of their contents recorded, with references to the publications in which the originals have appeared which cannot fail to be of great assistance to many who have to follow the work done in the prosecution of pharmacological research. The abstracts are systematically classified according to the botanical position of the plants from which the materials treated of are derived, and thus the reference to the contents of the report is considerably facilitated. All who are interested in pharmacology and economic botany will recognise that they are indebted to the Committee of the German Pharmaceutical Society for the pains taken in collecting a mass of useful information and presenting it in such a convenient form.

Bericht von Schimmel and Co. October, 1896.

This number of the excellent report published half-yearly by Messrs. Fritzsche is, as usual, full of interesting information concerning the commercial position of essential oils and the results of recent chemical investigations. As a testimony to the value of the publication, Messrs. Fritzsche have been requested to issue a French translation as well as the English version of the report, which has been prepared by them for the last few years. The present report contains an interesting account of a visit to the district where cassia oil is produced in China, with the object of ascertaining exactly how this oil is distilled, and where the adulteration of it is practised. From the observations made it appears that cassia oil is generally distilled from the leaves, leaf stalks and young twigs of the plant, and that the adulteration of the oil, thus obtained in a very crude manner, is carried out by the intermediate dealers, through whose hands it passes, before reaching Hong Kong. Attached to the report is a map of the district where cassia oil is produced, showing also the localities visited.

PHARMACEUTICAL JOURNAL.

A Weekly Record of Pharmacy and Allied Sciences.

ESTABLISHED 1841.

Circulating in the United Kingdom, France, Germany, Austria, Italy, Russia, Switzerland, Canada, the United States, South America, India, Australasia, South Africa, etc.

Editorial Office: 17, BLOOMSBURY SQUARE, W.C.

Publishing and Advertising Office: 5, SERLE STREET, W.C.

LONDON: SATURDAY, OCTOBER 31, 1896.

THE REALITY OF FOREIGN COMPETITION.

Much has been said and much has been written concerning the influence upon British industry of trade development abroad; many reasons have been advanced for the hypothetical advantage gained by foreign manufacturers at the expense of our fellow countrymen, and as many suggestions have been offered for remedying the assumedly evil state of affairs. Protectionists have, naturally, tortured trade statistics to prove, as they conceived, that English trade is going to the dogs, whilst Free-traders have followed the lead of the dear old *Daily News* and made identical figures yield a totally opposite result. But statistics as we all know can be manœuvred so as to prove anything, views on every subject under the sun run perpetually to two extremes, and the average onlooker is well aware of the fact that there are always many people who must anchor their minds firmly for the time being to some single article of faith, and are, in consequence, ever ready to fall down and worship at the feet of some unstable Colossus raised by the most recent alarmist.

Nevertheless, putting all exaggeration on one side, British trade is being gradually undermined, not only as regards exports but also with respect to our home trade. The mischief done is yet far from being irreparable, however, though none of the remedies that have been formally advocated are likely to be of much avail. The fact of the matter is that most of the reasons advanced to account for the undoubted decline in our commercial prestige are quite beside the mark. Lack of general and technical education is the favourite hobby horse bestridden by the critics who are always with us, and from time to time we hear a tremendous beating of the big drum, designed to call attention to and magnify the cause for which Government or some public body is to be cajoled into supplying funds. Though not usually stated, the amount realised goes to provide salaries for adventurers posing as advocates of scientific progress and apostles of general prosperity. Frequently the trick serves, and courses of assisted instruction are commenced, or perchance an institute is founded, with the usual accompaniments. The noisy critics then become teachers and governors as a matter of course, handsome salaries and even titles are shared amongst the drum beaters and self-advertisers, and the public is congratulated upon an achievement which already contains within it the elements of decay. We attain an extreme point in the direction of attempting to turn out technical chemists and other skilled craftsmen to order when we resort to the impracticable expedient of Acts of Parliament. The various Local Taxation and Technical Instruction Acts passed by the Parliament of the United Kingdom during recent years may be productive of some good results, but chief amongst these will almost certainly be the realisation by the British public of the absurdity of scattering money broadcast in the attempt to realise the impossible.

But, without staying to consider other alleged causes, or propositions for improvement, it may safely be declared that the real reason of our present discomfiture in the world's markets is lack of business ability. This may be thought a bold and unwarranted assertion, but facts in support of it crowd upon the minds of those who are in a position to form a correct opinion and are sufficiently free from prejudice to allow those facts due weight. Consider how difficult it is to induce English craftsmen and manufacturers to put some novel idea into concrete shape, and how, after vastly unnecessary delay, they will calmly fleece you for carrying out your plans, notwithstanding the fact that you may have suggested to them the germ of a new and profitable line of business. Against this put the fact, proved by many amongst us, that a German manufacturer will often experiment for you cheerfully and, after long labour and considerable expenditure of skill and money, be glad if the specimen he sends to you at a nominal price meets your wishes. Contrast, too, the difference in methods in submitting samples (Germans willingly and free of cost, Englishmen grudgingly and at exaggerated prices) or goods on approval, and in the amount of trouble taken abroad (often much) and here (mostly none) to supply exactly what the customer requires, especially in cases where he is himself in doubt as to what he needs exactly. Instances abound in which the greater attention and better insight of the foreigner have amply sufficed to turn the scale in his favour, despite the strongest sentiment in favour of the productions of the native country.

More than this, our Continental opponents are not content to rest on their oars when their business is once fairly established. They do not seem to think that capital outlay ought to cease with the primary outfit of their factories, and henceforth begrudge the cost of new machinery or the expense of installing new processes. True, they receive State subsidies in many cases, but the resulting profit benefits the entire community and not individual manufacturers only. Witness the magnificent results of the Jena glass works, which now supply the whole world with material that has effected a revolution in optical science, and cannot yet be procured elsewhere. Witness, too, the development of aniline dye works, the manufacture of fine chemicals, and many other industries in which until quite recent years Britain reigned supreme. Deficient technical education in this country is doubtless one factor in the change that has taken place, but only a minor one. Lack of enterprise, disinclination to depart from old-fashioned habits, unsatisfactory business methods, and support of fads have much more to answer for in this respect, and total reversal of a business policy founded upon conceit that was perhaps at one time justifiable, is the only remedy for the existing state of affairs that is likely to be of any avail. Here is the key to the situation; who will profit by the hint and learn how to apply it?

ANNOTATIONS.

The Decision in the Burgon Case, given at Sheffield last week, was both tardy and unsatisfactory, for the judge thought fit to give utterance to comments that were but too evidently called forth by the circumstance that he found the Pharmacy Act left him no discretion in the matter of penalties and costs. The solicitor for the defendants did exceedingly well for his clients, but even his persuasive arguments failed to induce the embodiment of the law to risk having his procedure called in question in a court of appeal. Second thoughts are proverbially best and so, after somewhat lengthened consideration, Judge Waddy felt himself impelled to settle the matter of costs, though with objectionable qualifications, on the lines that ought to have been followed when the case was originally heard. It is satisfactory to find that his Honour expressed himself as convinced that the Pharmacy Act is "a most beneficial Act," but any sense of gratification on this score is tempered by the reflection that he does not appear to have made adequate allowance for the difficulties that must always exist in the way of putting the Statute in force. At the same time, the more fuss that is made about isolated cases, such as this, the more widely will the intention of the Pharmaceutical Society to secure due observance of the law be made known.

Another Similar Case, in which the judge went out of his way to display uncalled-for sympathy with the defendant, was heard at Bow County Court on Monday. An individual who acted as branch secretary of the National Seamen and Firemen's Union, appears to have acted as "cover" to the maker and unregistered vendor of "rat-cake" containing arsenic. As a number of children in the neighbourhood had been poisoned by similar material, the source of which could not be ascertained, the case ought to have seemed bad enough to satisfy anyone that public safety was endangered. But Judge French must needs act the guardian angel and protect the "working man," even at the expense of his own dignity and reputation for common sense. Accordingly when he found he had no discretion in the matter of allowing the full penalty and costs, he stultified his decision by ordering the amount to be paid at the rate of one shilling per month. Thus is justice once more vindicated and the poor, ill-used "working man" and law-breaker avenged, at one and the same time.

The Calendar of the Pharmaceutical Society for 1867-68, was stated last week to have been the first published. This statement should perhaps have been qualified by the addition of the words "in its present form." No earlier Calendar, properly so-called, exists in the Society's Library, but the Librarian has a haunting recollection of a publication on which the word "Calendar" appeared, dated 1866 or earlier. If any reader possesses a copy of this hypothetical Calendar, and cares to send it to the Library at Bloomsbury Square, the gift will be gratefully received.

A Benevolent Suggestion.—A very practical means of obtaining small contributions to the Benevolent Fund, that has been adopted by the Brighton Junior Association (see page 396), may serve as a hint to other local associations, and be useful in augmenting the ability to relieve the numerous cases of distress which come before the Committee. The fact mentioned by Mr. Blamey (the Honorary Secretary of the Brighton Association) that within the last three years a sum of twenty pounds has been collected and forwarded to the Fund is amply sufficient to recommend the plan for imitation

Iodo-thyrin.—We notice that the name of the preparation obtained from thyroid gland according to the method described by Professor Baumann (see *Pharm. Journ.*, vol. 56, p. 161) has now been altered from thyro-iodin to iodo-thyrin, in order to obviate confusion with other preparations bearing names similar to that first adopted by the makers, Messrs. Bäyer and Co., of Elberfeld

Carbon Monoxide, which had escaped through fissures in a wall dividing a lime-kiln from a dwelling-house, has been proved to have been the cause of the death of two individuals at Melaunay, near Rouen, some nine years ago. The wife of one of the victims was accused of procuring their death by administering poison, and sentenced to imprisonment for life, the evidence of three medical experts who conducted the *post-mortem* examination being held to establish her guilt most conclusively. Other fatalities having occurred on the same premises in the course of years, the case was re-opened, and last week the unfortunate victim of this miscarriage of justice was formally rehabilitated in character, not, however, until she had been broken down by her misfortunes.

The Pharmaceutical Cricket and Football Club will hold its annual smoking concert in the Crown Room, Holborn Restaurant, on Thursday, November 26, at 8 p.m. With advancing years the club grows more ambitious, and this year an unusually extensive and attractive programme is promised. This of course involves considerable expense, and we understand that not many less than two hundred and fifty members and friends ought to consider it a matter of duty to attend. At the same time three hundred or more will not be objected to. Professor J. Reynolds Green is expected to officiate as Chairman on this occasion, and tickets (1*s.* 6*d.* each) may be procured from Messrs. E. A. Umney, T. I. J. Wickens, or Harold Wilson, at 17, Bloomsbury Square, W.C. In case everyone should apply at once, it may be as well to state that letters will be attended to strictly in the order in which they are received.

Dr. George Harley, F.R.S., whose death occurred suddenly on Tuesday, has had an exceptionally distinguished career. A graduate of Edinburgh University, he went to Paris to pursue his scientific studies in 1851, and two years later was elected president of the Medical Society of Paris, after having published a paper which led to important improvements in the treatment of diabetes. Subsequently, he studied at the Universities of Berlin, Heidelberg, Würzburg, and Vienna. Returning then to England, he became in turn Curator of University College Anatomical Museum, lecturer on Practical Physiology and Histology at the same institution, Professor of Medical Jurisprudence, and Physician to University College Hospital. His fellowship of the Royal Society dates from 1865, and he was also F.R.C.P (Lond. and Edin.), and a corresponding member of leading foreign Academies. It was Dr. Harley who suggested the use of the well-known A.C.E. anæsthetic, and he was also the author of a number of important scientific memoirs and medical works.

Pharmacists Interested in Lantern Work should not fail to see the special Lantern Number of the *Photographic News*, a paper edited by a pharmacist, and under his fostering care ably maintained in the front rank of journals appealing to amateur photographers. The lantern and its manipulation are dealt with from almost every conceivable point of view in this special issue, and thirty-two pages of most valuable practical hints are supplied for the humble, democratic penny.

The Liverpool Pharmaceutical Students' Society, which has for its object the bringing together for the advancement of pharmacy and for the mutual improvement of all those engaged in its study, the younger members of the craft in particular, owes its title to an attempt to realise the aphorism "Once a student always a student." A large number of its supporters are registered men and the support of all connected with pharmacy in the district is asked for. The Society possesses a herbarium, and the new Materia Medica Cabinet recently provided by the Pharmaceutical Society is at the disposal of the members. Meetings are held in University College on alternate Thursdays, from October to April, and in addition, two musical and social evenings and a dinner are held during the session, papers being given by medical men and others, in addition to the members of the Society.

The Chemists' Assistants' Association.—The Annual Conversazione takes place on Thursday, November 12, and the Honorary Secretary, Mr. Geo. E. Pearson, calls attention to the opportunities afforded by this annual reunion to assistants just come to town to form acquaintanceships. Tickets may be obtained either from the Honorary Secretary at 184, Blomfield Terrace, Paddington, W., or from the Secretaries of the Association, at 103, Great Russell Street, W.C. The reception will be at 8.30 p.m., and dancing begins at 9.45, the Grosvenor Ladies' Concert Party giving selections whilst guests are being received, and Hall Wollnoth's Band providing welcome merry strains during the remainder of the evening. Incidentally it may be noted that Cinderella dances are announced by the Association for December 3, February 4, 1897, and March 25. Thus will the junior pharmacists of London vary their more serious programme during the months of long evenings.

Glasgow Pharmacists also crave for amusement as well as instruction, and this weakness will be encouraged by the president and council of the local association on Guy Fawkes' day, in the evening. All good pharmacists are invited to the "At Home," quite irrespective of the places they hail from, and they are promised kindly welcome and agreeable fare if they will but attend at the Cockburn Hotel, Bath Street, Glasgow, between 8.30 p.m. and midnight on Thursday, November 5. So says Mr. Arthur McKellar.

Auguste A. L. Trécul, whose death at an advanced age was announced last week, was a distinguished plant anatomist, who entered the domain of science through the portal of pharmacy. The *Gardeners' Chronicle* points out that he devoted special attention to the development and relations of the vascular system in plants, as well as to the mode of growth of stems and roots, the effects of decortication, the production of gnaurs, and other subjects of interest to cultivators. He also studied the minute anatomy of the Nymphæaceæ, investigated the nature of the perforations in the leaves of some Aroids, *e g.*, Monstera, and classified the Artocarpaceæ. In the early part of his career Trécul travelled on behalf of the French Government in Texas, the Rocky Mountains, and Mexico, but some of his collections were lost by shipwreck off the Azores. Trécul was a member of the Academy of Sciences, and died at the age of seventy-eight.

A Manual and Dictionary of flowering plants and ferns is shortly to be published by the Cambridge University Press, in the biological series of the 'Cambridge Natural Science Manuals.' Morphology, natural history, and classification will all be treated of by the author, Mr. J. C. Willis, M.A., and the two illustrated volumes, with a glossarial index of English names, economic products, technical terms, etc., should prove of value to many of our readers.

Oysters and Typhoid Fever.—The *British Medical Journal* calls attention to the need for action in regard to the possible dissemination of typhoid infection by the consumption of oysters. Since the danger was first pointed out by Professor Conn and Sir William Broadbent, the subject has been investigated by Professors Herdman and Boyce, and reported upon by Dr. Cartwright Wood, with the general result of showing that serious danger of infection exists when oysters are taken from places subject to contamination by sewage. It is suggested that the Local Government Board is alone capable of taking such action as is requisite in the public interest by closing any oyster-bed that may be found capable of spreading disease. If the Board has not the power to do so at present, the desirability of conferring upon it that power is held to be evident from the number of cases that have been directly traced to the consumption of oysters from contaminated beds.

Poisoning by Carbolic Acid.—According to the *Manchester Guardian*, a memorial has been sent by the Manchester and Salford Sanitary Association to the Home Secretary on this subject. In this it is urged that in the interest of the public "the open sale of the crude liquid commonly supplied as carbolic acid should be prohibited, and that this substance should be placed on the list of poisons of which the sale is restricted by law. The importance attached by the public to the supposed germicidal properties of carbolic acid, it is pointed out, has led to its almost universal use in households in order to counteract the effect of bad smells, and in the houses of the working classes it is kept in bottles and other vessels usually used for harmless fluids and beverages, the consequence being that accidental poisoning is of common occurrence, a large number of the victims being children. It is further stated by the memorialists that "as a means of committing suicide carbolic acid heads the lists of poisons used for this purpose. In England and Wales between 1885 and 1894 no less than 683 persons killed themselves with it. Compared with the poison which stands next to it the proportion is as 683 to 565. All other poisons resorted to for the purpose of committing suicide are numerically a long way behind." During the five years, 1885 to 1889, the number of deaths was 354, or 71 per annum, whereas during the succeeding five years (1890 to 1894) the number was 618, or nearly 124 per annum. The year 1894, it is pointed out, showed the appalling total of 201 deaths due to carbolic acid.

London Drinking Water is at last to be properly and independently tested, the County Council having decided this week to spend ten pounds weekly for the purpose. It may be news to many that detritus from the Thames valley is being brought into the metropolis by the water companies and served to their customers to the extent of many hundred tons annually. There is no extra charge for this, though that might naturally be expected, and water consumers even venture—somewhat feebly it is true—to protest against "wet mud" issuing from their water-taps. The companies' chemists report that there is no suspended matter in London filtered water, meaning doubtless after it is filtered by consumers. The official analyst, Dr. Frankland, also omits to refer to suspended matter. Now, however, the County Council's chemist has devised "a new micro-filter process," and—despite the opposition of Lord Mountmorres, Mr. Fletcher, and Sir John Lubbock, whose action in this matter is worthy of note—it has been decided to examine the water supply of each company three times weekly. Microbes and mud in the London district should, therefore, be at a discount shortly.

PHARMACEUTICAL SOCIETY

EXAMINATIONS IN EDINBURGH.

October, 1896.

MAJOR EXAMINATION RESULTS.

Candidates examined and failed..... 3

MINOR EXAMINATION RESULTS.

Candidates examined..... 118
" failed..... 67
" passed 51

Barclay, Robert Wilson.
Barker, Alfred Albert.
Barrie, Thomas Stewart.
Bennison, Ernest Carr.
Blair, Alexander Laird.
Boughen, Percy William.
Bower, Arthur Ernest.
Brodie, John Dallas.
Burdekin, William Frederick.
Casey, Frederick John.
Chapman, James.
Cosh, Arthur Lionel Strode.
Culshaw, John.
Davies, Percy.
Dickson, John Scott.
Douglas, James Malcolm.
Evans, Frederick James.
Fernley, Albert.
Ferriday, Alfred James.
Fraser, Thomas Angus.
Hamilton, George William.
Harris, John.
Hawley, John William.
Heddle, James S. B.
Hesketh, Thomas Arthur.
Holden, Robert Adrian.
Horrocks, William Edward.
Hughes, Robert Ferguson.
Ironside, James Francis.
Irvine, James.
Jones, Harry Percy.
Laird, James Craigie.
Litherland, William Heald.
McGregor, George Alexander.
McKerlie, John.
McVitie, David William.
Malcolm, Robert Martin.
Monaghan, John Edward.
Mowat, James Heatly.
Musham, John Gilbert.
Myers, Gabriel.
Roberts, Haworth.
Roberts, John.
Smith, Harry.
Sutherland, James John.
Swindale, Jabez.
Tiley, Arthur Percival.
Wallwork, Herbert Augustus.
Walter, James Robert.
Waters, David Sandison.
Young, William Paterson.

CHEMISTS' ASSISTANTS' ASSOCIATION.

A well-attended meeting of this Association was held at 103, Great Russell Street, W.C., on Thursday, October 22, Mr. C. Morley (the President) in the chair. The Secretary, Mr. W. Moore, read the minutes of the previous meeting, which were confirmed. The following ten gentlemen were proposed and seconded as new members of the Association:—Messrs. A. Lee, D. Anderson, H. E. Morris, H. Meynell, R. G. Brown, E. C. Spurge, S. G. Massey, C. W. Houseman, H. Dwelly, and A. C. Ireland.

Mr. R. Glode Guyer, then read a paper on "Beeswax Analysis," which is printed at page 384.

At the conclusion of the paper, the President personally, and on behalf of those present, thanked Mr. Guyer for his most interesting and instructive paper. He said it certainly must have involved a large amount of work on his part in making all the experiments necessary to obtain the results given. He should like to ask Mr. Guyer if he had tried many samples of white wax, because he thought they would find that chemists in the country could obtain beeswax pure from the country people who kept bees, and who did not take the trouble to adulterate it; but the country chemist was dependent upon the wholesale houses for his supply of white wax, and the probability was that, as white wax was limited in its manufacture, and was he believed under the control of very few houses, it was a likely subject for adulteration. He thought it would have been a very good thing if Mr. Guyer had given some data on white wax. With regard to the different tests Mr. Guyer had mentioned, they were merely clinical tests, because if it was desired to get quantitative results it required a very great amount of labour and many experiments. Very little reliance could be placed on the melting-point test, as it varied considerably. The melting-point which reached the Pharmacopœia standard should be taken as indicating a pure wax. The suggestion about tallow being a constituent used in adulteration and the test mentioned was a very good one, and one they could easily apply. He wondered in his own mind whether Japan wax ought not to give off an odour in the same way that tallow did, because it was really a fatty substance, and were the same test applied should be able to be detected by the acrolein given off. With regard to carnaüba wax, it appeared to be very similar to ordinary beeswax in its composition.

Mr. C. J. Strother said that something like a quarter of a century ago, talking to a chemist at Brussels about beeswax analysis, he was told that when all the scientific tests had been tried and had failed to discover the presence of an adulterant in beeswax it could easily be detected, were it present, by simply applying the wax to the "teeth test." There was some amount of truth in the assertion, for he had tried it on several occasions and could usually tell if the wax was adulterated. There was a great difficulty now in obtaining beeswax absolutely free from impurities, because nearly all beekeepers employed the American method of providing the bees with artificial cells.

Mr. W. Moore asked whether the bleaching of wax had any deterrent effect on the value of saponification, and whether pharmacists were in the habit of bleaching their own wax. He believed it was an easy matter, as it had simply to be run out in thin sheets and exposed to the weather.

Mr. E. W. Hill thought that in these days of competition it was very essential that chemists should sell good and pure drugs, and in order to do this they must not only buy in the best markets, but it was their duty to see that, in buying beeswax, they got it pure. Therefore they should be able to test it, and find out whether the article they proposed to buy was adulterated or not. With reference to white wax, it would be interesting if Mr. Guyer could tell them whether there was a difference between wax that was bleached by ordinary exposure and wax that was treated with chemicals. He did not quite understand the phrase "incipient melting point"; a wax either melted or it did not.

Mr. H. Hymans said, with regard to white wax, many manufacturers had stated that it was almost impossible to get white wax absolutely pure. Some of the wax imported into England contained no paraffin, but was possibly adulterated with Japan wax, which was more difficult to detect.

Mr. C. A. Hill agreed with the previous speaker that Japan wax was very frequently used in the adulteration of foreign wax. Paraffin wax was a very common adulterant, but he thought it did not occur so much as Japan wax.

Mr. Guyer said with regard to Mr. Morley's remarks about the country chemists being able to obtain pure wax, he believed that many country people bought their wax from the towns. Replying to Mr. Hill, he said in making his analyses he had simply taken beeswax whether it was white or yellow. The chief difference between white and yellow he found was that white wax had a very much higher acid value, and the saponification value rose over 100 and very often 107 and 108, but that depended very much upon the way it was bleached. Wax bleached with chemicals had a much higher specific gravity than the air-bleached. With reference to Mr. Hill's remarks on the phrase "incipient melting point," Mr. Guyer pointed out that there was a point at which wax melted into a sort of creamy state, and another at which it became quite liquid. There was a difference between the two, although slight.

Mr. Strother had referred to the biting test, he (Mr. Guyer) thought it all depended on the man who bit the wax. One speaker had stated that paraffin wax was going out of fashion for adulteration. He would mention a few cases where chemists had recently been prosecuted for selling adulterated wax, and they would see that in the majority of cases the adulterant had been paraffin wax. He then read a list of nine prosecutions, seven of which were for adulteration with paraffin and two with resin. It was extremely difficult to detect Japan wax when used as an adulterant, and he did not think they would ever be prosecuted for having Japan wax present. He was speaking to a public analyst lately about it, and the analyst said that unless they could bring a very clear case before a judge he would not listen to the evidence.

Gelatin Coating Soluble in the Pancreatic Juice.—According to Hausmann (*Pharm. Gener. Anzeig.*), capsules or pills coated with gelatin are made impervious to the acid secretions of the stomach, but are easily disintegrated by the action of the pancreatic juice, after plunging them for eighteen minutes in a solution of formalin, then washing with water and drying.—*Journ. de Pharm. d'Anvers*, lii., 243.

BRIGHTON JUNIOR ASSOCIATION OF PHARMACY.

On Wednesday, October 21, this Association held the first social and musical evening of the session. Mr. A. P. Nosworthy (who has returned to Brighton after two or three years' absence, has opened a business in Preston Street, Brighton, and who was one of the organisers and the first President of the Association) occupied the chair. The cares and worries of business were put on one side, and pending examinations forgotten for the time, and the evening fully devoted to the enjoyment of an excellent programme, for the arrangement of which great credit is due to Messrs. C. G. Yates and C. A. Blamey (Hon. Sec.). There was a crowded house, which vociferously showed its appreciation of the really capital programme, which was sustained by the following gentlemen:—

Piano solo, Mr. H. E. Hedgcock; songs, etc., Messrs. H. G. Price, Little, J. King, Marten Barling, E. L. Carter, W. Lauder, Hebb, Peters, and Jones. Mr. H. E. Hedgcock also acted as accompanist.

During an interval in the programme light refreshment was provided, and at the close of the programme the Chairman (Mr. Nosworthy) proposed a vote of thanks to the gentlemen who had so kindly assisted in the programme, coupling with it the name of Mr. Hebb. The vote of thanks was most heartily accorded.

Mr. Hebb (of R. Fry and Co., Brighton), in responding, said it was always a pleasure to spend the evening with the Association, as visitors could always depend on having an enjoyable time.

Mr. A. T. Jeeves (President) then proposed a vote of thanks to the Chairman, which was seconded in eulogistic terms by Mr. C. G. Yates (ex-President), and was very cordially given with musical honours.

Mr. A. P. Nosworthy having thanked them one and all for their very hearty reception, the evening was brought to a close with the singing of the National Anthem.

The seventh annual dinner will take place at Booth's Restaurant, East Street, Brighton, on Wednesday, November 4, at 8 p.m., for which tickets, price 5*s*. each, can be obtained of the Hon. Sec., Mr. C. A. Blamey, 49, Grand Parade, Brighton, or from any of the Committee.

GLASGOW PHARMACEUTICAL ASSOCIATION.

OPENING OF THE SESSION.

The opening meeting of the present session of the Glasgow and West of Scotland Pharmaceutical Association was held on Thursday, October 22, in the rooms at 94, West Regent Street. There was a good attendance, Mr. W. L. Currie, President of the Association, occupied the chair. Some preliminary business having been disposed of,

Mr. Currie proceeded to speak concerning pharmaceutical affairs during the recess. The first matter of interest he referred to was in regard to the resolution forwarded by the Executive of the North British Branch relative to the Preliminary Examination. If those present had read the Government Visitor's report to the Privy Council on the examinations of the Pharmaceutical Society, there would hardly be any wonder that the desire to increase the stringency of the First examination should be gaining ground. Out of 1468 candidates who presented themselves, 760, or 51·8 per cent. failed. But the best proof of the correctness of Dr. Stevenson's remarks was to be found in the results of the qualifying examination. At the Minor examination held this month in London, out of 164 candidates only 50 passed. In a great many cases Dr. Stevenson's remarks supplied the reason of this, and in the interests of the candidates themselves and of their business, was it not desirable that this condition of affairs should be remedied? For years past he had been an advocate not only for increasing the stringency of the test, but of insisting that a youth should not be taken as an apprentice until he had given evidence of his fitness by passing the Preliminary examination. Comparing the Preliminary of the Pharmaceutical Society with other entrance examinations, it was a mere nothing, and it was not creditable that the present regulations, which allowed a candidate to present himself till successful, should be much longer continued. He would go the length of saying that if a candidate had failed three times, he should be debarred from presenting himself again. Was it any wonder that the "cram system" was so much practised when the time which should be devoted to the learning and acquisition of the business of pharmacy had to be utilised in getting up the three R's?

After referring to the re-election of Messrs. Johnston and Storrar, and the services rendered to pharmacy by Mr. Carteighe, the late President of the Pharmaceutical Society, Mr. Currie said that in the new President, Mr. Walter Hills, they had one whose name was a historic one, and whose ability and shrewdness were known and appreciated both in and out of London.

With regard to the coming visit of the British Pharmaceutical Conference to Glasgow, if the manner in which the invitation was received and accepted gave any indication as to the popularity of the prospective visit, he had only to say that given favourable weather conditions, all other things being equal, the visit to Scotland should be a record one. It would mean a good deal of work to the Local Committee in charge of the arrangements, but with such a chairman as Mr. McAdam there should be no difficulty. If there was one thing more than another for which Scotchmen were famous it was friendliness and a desire to entertain strangers hospitably, and he was quite sure that the chemists of Glasgow and the West of Scotland would celebrate the return of the Conference to their neighbourhood after an absence of twenty-one years in a manner creditable to all concerned.

The election of the North British Branch Executive, the annual meeting of the Federation of Local Associations and the relations of the Pharmaceutical Society with trade, were also referred to by Mr. Currie, who asked why, if dissentients had the welfare of their calling at heart, would they not affiliate with a body, the main object of which was to promote the greater unity of pharmacists? It might fail in its object, but it was not the first, as it would not be the last to fail in a good cause. He had heard it said that there was no necessity for the existence of the Federation, that the Society could do all and more than the Federation could ever hope to do. That he did not admit, because the associations composing the Federation were in, or should put themselves in, the position for coming into contact with a greater number of those of their calling than the Society, and by that means should be capable of promoting greater union, and individual local effort went a long way towards influencing a man who might never otherwise be reached.

A matter of considerable importance could be successfully carried out by means of the federated associations in the election of suitable representatives to the Council. As at present conducted, not much interest attached to the election, from the fact that very few of the candidates were known, and as the electors simply judged of their merits in most cases by hearsay, it was very difficult to say if those returned represented the true feeling of the electorate. He believed it was possible for associations to work together in such a way that when the time for nomination came round those interested in the return of certain individuals could by means of a circular putting forth their claims so influence the electorate in other districts as to make the return of such candidates sure. They in Scotland knew very little about English candidates, but as the interests of their English friends were similar to their own, they would in all probability support candidates recommended by a body composed of representatives from every association in the country.

During the past four years local associations had played an important part in discussions relative to pharmaceutical politics, and had had an influence for good in many directions. In the session now approaching he trusted the opportunity would not be wanting to show they still existed, and, should occasion require it, to speak their mind with no uncertain meaning. As Chairman of the Federation for the current year, nothing would give him greater pleasure than that some matters of importance should emanate from their Association worthy to be discussed by all the associations of the country, for the purpose of arriving at a knowledge of their views, in order that, if possible, unanimity of action could be agreed on.

Mr. James Moir, in proposing a vote of thanks to the President, took exception to some of his remarks. Regarding the Preliminary examination, he said that if it was to be made compulsory for a boy to pass his examination before entering the trade, it could not necessarily be made much more severe than it was. However, matters remaining as at present, he would support a proposal that the examination should be made more stringent, Regarding the proposal of the Chairman to debar a candidate from trying more than three times, he could not support that at all. He did not think any legislature would pass a law to that effect. The great danger was that if they made the examination more severe it would fill the trade with men who would not pass, and who would not have any intention of passing the examination.

Mr. John McMillan seconded the vote of thanks, which was unanimously agreed to, and the meeting separated.

LIVERPOOL CHEMISTS' ASSOCIATION.

The first meeting of the winter session was held on Thursday evening, October 22, at the Royal Institution, Colquitt Street, the President, Mr. Michael Conroy, in the chair, with a good attendance. After the usual routine business had been transacted, Mr. J. Smith, the Local Secretary of the Pharmaceutical Society, asked for information regarding a proposed meeting of the Proprietary Articles Trade Association in Liverpool to discuss matters appertaining to the excessive cutting of prices so prevalent. A letter had been read at a Council meeting the previous session from the P.A.T.A. suggesting that it would be advantageous to hold a meeting in Liverpool, and asking the Chemists' Association to name a date or alternative dates convenient for the purpose, but so far Mr. Smith had not heard of any action having been taken in the matter. The President informed Mr. Smith that a reply had been sent to the P.A.T.A. naming certain dates convenient to the Chemists' Association, but these had not been so to the P.A.T.A., and there the matter stood at present. In his opinion it would be as well to leave the matter with the Secretary, Mr. Wardleworth. The meeting agreed to this, and then passed on to elect the President for the session in the person of Mr. A. C. Abraham, F.I.C., F.C.S., on the motion of Mr. J. Smith, seconded by Dr. C. Symes. Though Mr. Abraham at first declined the honour, he gracefully withdrew his objection on seeing that the proposition was so generally acceptable to the members, and was elected unanimously. A note on the "Solubility of the Double Cyanide of Mercury and Zinc" was then read by Mr. Prosper H. Marsden, F.C.S., lecturer on pharmacy in Victoria University College, Liverpool, and which is printed at page 382.

In discussing the communication, Mr. A. C. Abraham remarked that he gathered from the experiments that this compound was a most undesirable one to use; that the borax solution evidently had dissolved out the occluded mercuric salt, and that the toxic effects produced only served to emphasise the undesirability of using bodies which are not definite chemical compounds, or at any rate very unstable. It would be much better to employ an oxy-mercuric salt liberating its cyanide, or whatever mercuric compound it might be, in small quantities and gradually, so as not to cause such powerful effects.

Dr. Symes said the salivation might be due to a peculiar idiosyncrasy of the patient as regards mercurials. His experience was that this particular compound had nearly gone out of use, and had been replaced by sublimate or carbolic acid. In fact he believed this was so by Sir Joseph Lister himself.

The President said Professor Dunstan had proved the compound to be a definite chemical compound, but a very weak one.

Mr. Marsden briefly replied to a vote of thanks accorded him and to the criticisms, and Mr. Harold Wyatt, jun., then read—

Dispensing Notes.

BY HAROLD WYATT, JUN., PH.CH.

Creosotal or Creosote Carbonate.—From its insolubility in most menstrua, except strong alcohol, can only be given in a mixture emulsified with gum or some similar emulsifier. The following formula I have found give a good mixture, in which the slight taste of creosote in the creosotal is well disguised :—

Creosotal	80 grains.
Gum acacia, in powder	3 drachms.
Rum	½ ounce.
Syrup of Tolu	½ ounce.
Water, to	4 ounces.

Melt the creosotal, pour it on the gum in a warm mortar, mix well, add the rum, and then water little by little, until an emulsion is formed, make up to 3½ ounces, and add the syrup last of all.

Guaiacol Carbonate can be dispensed in like manner, using 3 drachms of lump sugar to rub down the guaiacol carbonate and finely divide it before adding the gum. The mortar need not be heated at all in this case.

Guaiacol.—This is usually looked upon as insoluble in water, or nearly so, but my experience of the varying solubility of samples of creosote, coupled with a recent note from Mr. Hanson, a member of this Association, to the *Chemist and Druggist*, stating that guaiacol is soluble in water prompted me to ascertain to what extent guaiacol may be said to be soluble in water. I find that with a guaiacol of 1·124 specific gravity 1 part is soluble in 70 parts of water at 15·5 C., so that for all practical purposes not more than 48 minims will dissolve in 8 ounces of water. If larger doses are to be administered they may be given in capsules, but the guaiacol should then be mixed with some fixed oil, as it rapidly dissolves the hard gelatin capsules used in dispensing.

Syrup of Tolu.—The long boiling of the balsam of tolu in making the syrup by the B.P. process, in my opinion cannot fail to dissipate many of the volatile constituents of the balsam, and so tends to lessen the amount of flavour in the finished product.

Whilst in France I became acquainted with a rapid way of preparing a syrup superior to that made by the B.P. process, and one which keeps indefinitely. It is not by any means an entirely new idea, having been originated by Yvon, the well-known French pharmacist, some years ago, but its utility, and the fact that it is not practised to any extent by English pharmacists, are my excuses for bringing it forward.

The balsam of tolu is powdered in a mortar and then rubbed with four times its weight of well-washed coarse sand, heated so that the hand can just bear the heat. The particles of sand become coated with the tolu, and the powder so formed is treated with successive portions of water at about 120°–140° F. (50 to 60 C.), in which the sugar is afterwards dissolved with as little heat as possible. The advantage in the use of sand is that the tolu is exposed to the action of the water over a large surface, and must consequently be quite as well exhausted as by boiling, without the danger of the benzene taste sometimes noticed in the syrup when prepared by boiling.

Spirit of Sal Volatile.—In looking at the method for making this given in the Pharmacopœia, it has often struck me that the process of distillation renders it almost prohibitive to ordinary pharmacists, and that if an alternative could be devised yielding as good a product, but not necessitating the use of a still, it would be an all-round advantage. For some three or four years I have been using for flavouring purposes what is known as concentrated or terpeneless oil of lemon, and from its utility and strength I thought it might with advantage be used in making spirit of sal volatile so as to avoid distillation—a process generally conceded to be anything but improving to citrine odours. Accordingly I made a batch of spirit of sal volatile, without distillation, with a soluble oil of nutmeg, and in place of the 6½ drachms of oil of lemon to the gallon, as ordered in the Pharmacopœia, I employed 20 minims of a concentrated oil of lemon, said to be twenty to thirty times the strength of the ordinary oil. The resulting spirit was miscible with water, was of good flavour, and the nutmeg did not appear to predominate. The specific gravity was ·896, and the process followed was exactly that of the Pharmacopœia, minus distillation. The concentrated oil of lemon had a specific gravity of ·900 at 15·5 C. I may say that for all perfumery purposes I find this terpeneless oil absolutely useless in consequence of its volatility, and this even when mixed with the usual bodies employed for giving permanency to volatile odours. However, for liqueurs and syrups it is very superior to ordinary lemon oil, as it does not change nor develop any terebinthinate odour on keeping.

The President said he should be sorry to see the B.P. process for making syrup of tolu altered, if for no other reason than that it served to impart a somewhat bearable perfume to the otherwise chemically-saturated air of the laboratory. Though the surface of the tolu exposed to the action of the warm water in Yvon's process was very large, still he should imagine that the exhaustion of the tolu would be more perfect by using boiling, as in the B.P. method. The sample of spirit of sal volatile shown by Mr. Wyatt was of good flavour, but not quite so light in colour as the distilled, the colour being due doubtless to the action of the ammonia on the oil of nutmeg. Concentrated oil of lemon is claimed to be 20 to 30 the strength of the ordinary, but he should put it at the most as 12 to 15 times.

Mr. A. C. Abraham could confirm Mr. Wyatt's experience that the concentrated oil of lemon was useless in perfumery. He had tried, for instance, in the lin. pot. iod. *c.* sapone, and was very disappointed with the result. Spirit of sal volatile made by mixture was not at all similar to that made by distillation.

Mr. Cowley remarked it had not the same flavour, and was not so miscible with water. The oil of nutmeg contained traces of fixed oil, as shown by J. C. Umney, and this spoilt the miscibility of the non-distilled spirit of sal volatile.

In reply Mr. Wyatt said he could state confidently that the syrup of tolu by Yvon's process was equal to that by the B.P. method. The use of the concentrated oil of lemon for making spirit of sal volatile was only in the nature of an experiment, and if a pure and soluble oil of nutmeg were used, he ventured to think no one could

detect any inferiority in a non-distilled sample made in the way he advised. Of all preparations the lin. pot. iodid. *c.* sapone would be the one in which to use the concentrated oil of lemon if it were useful as a perfume, for one of the principal causes of the liniment becoming coloured on keeping was that the terpenes in the oil of lemon on exposure to the air absorbed oxygen with the production of peroxide of hydrogen, which, even in infinitesimal amount, liberated iodine from the iodide. His object in bringing these notes before the notice of the meeting was to create a discussion, and in this he had not been disappointed.

Mr. Wardleworth exhibited a specimen of matico, differing considerably from the official, but which he had not been able to identify; this he trusted to do at an early date, for Mr. E. M. Holmes, the Curator of the Pharmaceutical Society's Museum, had been supplied with specimens, as had also the authorities at Kew.

WINDSOR DISTRICT CHEMISTS' ASSOCIATION.

On Friday, October 23, a meeting of the above was held at the residence of the Mayor of Windsor (Bernard Westlake, Esq.), at which were present Mr. Bernard Westlake, Mayor, in the chair, Messrs. Baldwin, Everett, Grisbrook, Harmer, and Wood, all of Windsor, Mr. Walden, of Slough, Mr. Willcocks, of Datchet, and Mr. Oldham, of Eton.

A most excellent dinner was generously provided by the Mayor, who in due course proposed the health of the Queen. This being duly honoured was followed by that of "Our Host, the Mayor," and it was mentioned that this was believed to be the first occasion on which so many local chemists had met together, there being present all in Windsor, Datchet, Slough, and Eton, with the exception of one gentleman, who wrote that he was unfortunately unable to be present, and Mr. Dawson, of Slough, who has been very seriously ill, but we are glad to hear is now recovering. A very pleasant discussion on local matters ensued, and it was unanimously agreed to appoint a committee of three (Messrs. Westlake, Grisbrook, and Oldham) to endeavour to prepare a general price list for submission at a future meeting.

The Association has to thank the Mayor for a most enjoyable and useful evening.

QUEBEC PHARMACEUTICAL ASSOCIATION.

EXAMINATION RESULTS.

The Preliminary Board of Examiners of the Pharmaceutical Association of the province of Quebec held their quarterly examinations in Montreal and Quebec, on Thursday, October 1, when twenty-four candidates presented themselves in Montreal and one in Quebec, and of these the following, named in order of merit, passed, namely:—E. R. Paterson, Joseph Valois, E. Belisle, A. Laviolette, Edmond Dion, Miss Jessie E. Hill, G. Faulkner, Miss A. A. Prevost. Roger Pasquin passed upon all subjects but English, for which subject he will require to present himself at the January, 1897, examination. The remainder of the candidates were referred back for further study. The examiners were the Rev. Abbé Verreau, of the Jacques Normal School, and Professor Isaac Gammell, of the High School, Montreal. The next examination will be held on the January 7, 1897.

The Board of Examiners of the Pharmaceutical Association of the Province of Quebec held the semi-annual examinations for Major and Minor candidates in Laval University, Quebec, on Tuesday and Wednesday, October 13 and 14, when ten candidates for the Major, and nineteen for the Minor examination presented themselves. Of these the following passed, and are named in order of merit, namely:—As "Licentiates of Pharmacy": A. C. Paquette, Joseph Ronthier, T. E. Huot, and Achille Goyette. As "Certified Clerks": A. Lemoine, W. F. Roach, Norman Holden, A. Lebeau, A. P. Fortin, A. E. Clement, J. P. O. Boisseau, A. Chretien, and Phileas Theriault, the remainder of the candidates being referred back for further study. The candidates were examined by written and oral examinations, and the subjects examined upon were materia medica and toxicology, chemistry, botany, pharmacy, practical dispensing, reading of prescriptions, and weights and measures.

The examiners were W. H. Chapman and A. J. Laurence (Montreal), R. W. Williams (Three Rivers), A. E. Du Birger (Waterloo), and J. Emile Roy (Quebec); E. Muir (Montreal), acting as Secretary of the Board. The next examination will be held in Montreal in April.

PARLIAMENTARY NOTES AND NEWS.

Select Committee on Petroleum.—It will be remembered that this Committee was unable at the time of the rising of the House of Commons in August to conclude the investigation upon which it was engaged. A report of the evidence already taken was therefore agreed to, together with a recommendation that the inquiry be continued early next session. The report has now been issued from Her Majesty's Stationery Office in the form of a Blue Book of 917 pages.

The Committee, it appears, has examined forty-two witnesses representing, one would imagine, every conceivable interest in connection with the subject. Whether it will be an advantage to the Committee or not one does not dare to say, but the inquiry has been remarkable by the number of the scientific counsellors assisting thereat. Among experts examined were Lord Kelvin, Sir F. A. Abel, Sir H. E. Roscoe, Professors Attfield, Chandler, Dewar, Mendeleef, and Ramsey, Dr. Stevenson Macadam, and Mr. Boverton Redwood, who, it may be remarked *passim*, was under examination three and a half days.

The Scientific Evidence was naturally directed principally to the consideration of what was a safe flash-point for petroleum, and on this subject a charming independence of thought seemed to exist. One party, headed by Lord Kelvin, saw salvation only in the raising of the flash-point above 100°, whilst another section of experts, supported by Sir F. Abel and Mr. Redwood, devoted their energies to demonstrating that the 73° Abel close test was quite adequate, and that a higher standard would not necessarily imply a greater degree of safety either in storage, conveyance, or consumption.

That Some Amendment in the law is urgently needed was amply conveyed in the evidence given by the administrative authorities through Col. Sir V. Majendie and Sir Courtenay Boyle. Both these witnesses animadverted on the absence of control over the bulk of the petroleum, paraffin, etc., imported and used. The only liquid to which the present Petroleum Acts apply is that which flashes below 73° F. (Abel test)—*i.e*, liquid which, properly speaking, is not petroleum at all. Even so far as regards the very limited amount of oil or spirit under control, the regulation is extremely defective. True there are certain safeguards prescribed, but there is no obligation on local authorities to enforce them, nor has the Home Office any power to administer the Act or cause it to be administered.

The Present Law in fact, to use the language of H.M. Chief Inspector of Explosives, "does not provide or nearly provide for the public safety." The Board of Trade possesses a certain control in reference to the unloading of petroleum ships, but none at all as regards the loading of such vessels, or the storage of the cargo in warehouse. Nor can the Department cause the ship to be cleansed of petroleum vapour (the most fruitful source of accident) after the oil has been discharged.

Reference to this Anomalous State of the law is sufficient to show that the enquiry conducted by the Select Committee is not inopportune, but seeing that at least three previous enquiries have been held without much result, one is not led to a sanguine anticipation of improved legislation in the immediate future. The report now issued makes very interesting reading, and contains a mass of very valuable information on the subject of inflammable liquids, but it will naturally be a considerable time before a Parliamentary Committee can properly assimilate the details and formulate a satisfactory measure of protection against an increasing danger.

A Departmental Committee of the Treasury is now investigating the question of the purity of beer materials. Many persons have a hazy kind of impression that very little of the hop plant finds its way into the composition of ordinary beer. It is refreshing, therefore, to learn from the evidence of the Chief Inspector of Inland Revenue and Excise that the use of hop substitutes is by no means general. In fact, the return shows that more than 55 per cent. of the brewers use

malt and hops only—the bulk of the others using "other grain" saccharum, saccharum syrup, and glucose, chiefly for the purpose of giving stability to the beer. The witness, in answer to a question by Professor Odling, stated that the Board of Inland Revenue did not interfere with "hop substitutes" which are harmless, such as quassia, but would certainly prevent the use of cocculus indicus, on account of its poisonous nature. He also declared that there were no restrictions as to the quantity of salt added to beer. The evidence of this official was confirmed by the testimony of Dr. G. Harris Morris, a chemical expert representing the Country Brewers Society, who stated that so far as his knowledge went, no single item used by brewers was deleterious to health.

PARLIAMENT, which stood prorogued to October 31, has been further prorogued by Royal Proclamation to Thursday, December 10.

LEGAL REPORTS.

PROCEEDINGS UNDER THE PHARMACY ACT.

ILLEGAL SALE OF TEASDALE'S CHLORODYNE.

Pharmaceutical Society v. *Burgon and Co.*

On the 15th inst., at the Sheffield County Court, before his Honour Judge Waddy, Q.C., the case of the Council of the Pharmaceutical Society *v.* Burgon and Co. was again mentioned. It will be remembered that when the case was originally heard, on August 19 last, judgment was given for penalties, but his Honour postponed giving his decision with regard to costs (*ante*, p. 194).

Mr. A. Neal again represented defendants, but the Society was not represented.

After some conversation as to the bearing upon the case of the Pharmacy Acts and of the County Court Acts respectively, his Honour intimated that he found he had no option in the matter, and must allow plaintiffs' costs.

ILLEGAL SALE OF RAT POISON.

Pharmaceutical Society v. *Potton.*

On the 26th inst., at Bow County Court, before his Honour Judge French, the Council of the Pharmaceutical Society sued Ebenezer Potton, of 29, Tidal Basin Road, Victoria Docks, E, for a penalty for retailing poison contrary to the provisions of the Pharmacy Act.

Mr. T. R. Grey, instructed by Flux, Thompson, and Flux, appeared for the Society, and defendant appeared in person.

Mr. Grey, in opening the case, said the action was brought against Potton, who was the branch secretary of the National Seamen and Firemen's Union, and not a registered chemist, for selling a packet of "Hammond's Remedy for Killing Vermin." This was found to contain sufficient arsenic to kill five hundred people, and the matter was very serious, as a number of children in the neighbourhood had been poisoned by "rat-cake" containing arsenic, the source of which it was difficult to trace. The full penalty was five pounds and could not be reduced by the Judge.

Defendant, interrogated by the Judge, who told him he had been guilty of a most serious offence, acknowledged that he was not a chemist, but stated that he had only sold the packet of poison to oblige a friend, Mr. Gibbs, who made it. He had not benefited by the transaction personally,

Mr. Grey, in answer to his Honour, said that according to the Act the actual seller and not the maker must be proceeded against.

His Honour: Then it is a bad Act and the sooner you get it amended the better.

Ultimately an order was made for the full penalty and costs, but to be paid at the rate of one shilling per month.

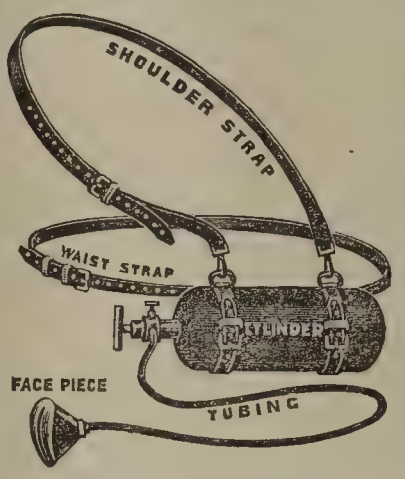
Mr. Grey protested that this condition would have a very bad effect, but his Honour refused to hear him further.

TANNOFORM.—This compound of formaldehyde and tannin, introduced by Merck, has been extensively employed by Buck and Moor as a dressing in various forms of skin diseases. It was employed either pure as a dusting power or in a 20 per cent. ointment with lanolin and vaselin. It has also been serviceable in the dressing of surgical wounds, old infectious sores, bedsores, ulcers, and other lesions. In all cases the antiseptic and drying effects were very marked, and there was no irritation of the skin. The authors also used it with satisfactory results as an internal remedy in infantile diarrhœa.—*B. M. J. Epit.*, 2/96/47, after *Belg. Med.*

NEW IDEAS

[Inventors and manufacturers are invited to submit specimens of novelties, descriptive notices of which will be inserted for the information of readers of the Journal. Whenever possible, illustrative blocks adapted to the width of the Journal columns should accompany the particulars sent. Address: Editorial Department, 17, Bloomsbury Square, W.C.]

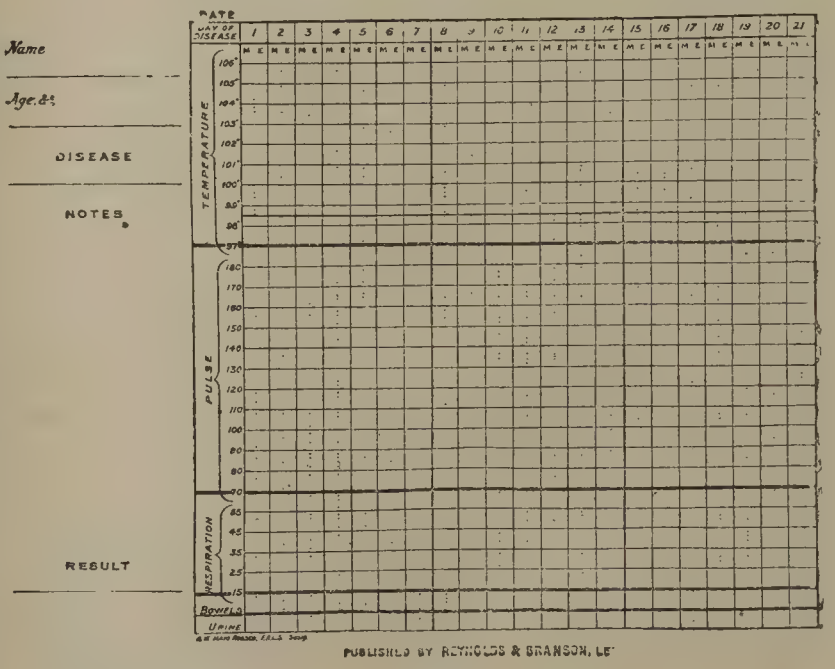
ABBOTT'S SLING FOR OXYGEN CYLINDERS.



This arrangement has been devised by Mr. T. B. Abbott, L.S.A., Lond., of Aberford, Yorkshire. It was suggested by his personal experience as a medical member of the rescue parties engaged after the frightful colliery explosion at Micklefield in May, 1896. Compressed oxygen gas was provided as soon as the work of rescue commenced, and its restorative value was found to be very great. But the impossibility of carrying the cylinders over the extensive falls of stone in the workings along with the necessary dressings, restoratives, and lamp showed Mr. Abbott that smaller cylinders were needful, and also that the cylinders must be slung in such a way as to be put on or off in a moment, both arms being left free to manipulate the gas, or to give restoratives, or to use dressings, etc. The sling, which is made only by REYNOLDS and BRANSON, of Leeds, is suited to the 10-feet cylinders (or smaller), and it enables this supply to be taken wherever a man can pass in the pit.

A NEW MEDICAL CHART.

In the ordinary chart supplied for the use of medical men the whole attention is directed to the temperature, with very little reference to pulse or respiration. In many cases, however, the pulse has far greater significance than the temperature, this applying especially to abdominal cases, and, with a view to being able to compare the daily variations in temperature, pulse, and



respiration, a new form of combined chart has been suggested to Messrs. REYNOLDS AND BRANSON, of Leeds, by Professor Mayo Robson, F.R.C.S., and that firm is now prepared to supply it accordingly.

CORRESPONDENCE.

All Articles, Letters, Notices, and Reports intended for publication in the Journal, Books for Review, and communications respecting Editorial matters generally must be Addressed "Editor, 17, Bloomsbury Square, London," and not in any case to individuals supposed to be connected with the Editorial Staff. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

Any Instructions from Members, Associates, and Students of the Pharmaceutical Society, with reference to the transmission of the Journal, should be sent to the Secretary — Mr. Richard Bremridge,— 17, Bloomsbury Square, London.

Business communications—including advertisements, orders for copies of the Journal, and instructions from Subscribers respecting transmission of same—must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London. Cheques and money orders should be made payable to "Street Brothers."

Correspondents who wish notice to be taken of their communications must write in ink, on one side of the paper only, and should authenticate the matter sent with their names and addresses—of course not necessarily for publication. No notice can be taken of anonymous communications.

Drawings for illustrations should be executed twice the desired size; clean, sharp lines being drawn with a pen and liquid Chinese ink. Shading by washes is inadmissible. Photographs can be utilised in certain cases.

Names and Formulæ should be written with extra care, all systematic names of plants and animals being underlined, and capital letters used to commence generic but not specific names.

Reprints of articles cannot be supplied unless authors communicate with the Editor before publication.

Prescribing and Dispensing.

Sir,—I read with considerable astonishment Dr. Cooke's letter to the *British Medical Journal* anent prescribing and dispensing, and with not much less astonishment his subsequent letter to the *Pharmaceutical Journal*. Dr. Cooke is evidently quite ignorant of what the art of dispensing really consists, and of the widespread and expensive education that has to be acquired by pharmacists in order to fit them for the position which, in the interests of the public safety, the law requires them to hold. Dr. Cooke apparently thinks that pharmacists would be sufficiently remunerated for dispensing by charging for the mere cost of the drugs employed. It might as well be argued that, as a physician, I should merely charge my patients for the cost of the sheet of paper and ink with which I present them in the form of a prescription. I think that pharmacists may rest assured that Dr. Cooke's absurd assertions find no echo from members of the medical profession generally.

I must, however, also take exception to the tone of Mr. S. G. Bartlett's letter in your issue of October 17. Certainly I should consider it a presumption on the part of a pharmacist to employ the stethoscope and bistoury, since a thorough medical training is required to appreciate and recognise the signification of the sounds heard by the former and to know the anatomy of the parts that may be safely incised by the latter. Mr. Bartlett's reference to "minor ailments" might perhaps hold good if it were possible for a person inexperienced in the diagnosis of disease to be able to distinguish between minor and grave ailments. The ability to make such a distinction, however, requires the possession of medical skill and long medical experience. To quote one instance: How can an inexperienced person possibly distinguish between the cough which is simply due to slight bronchitis and the cough which is due to some grave form of heart disease in its early stages? I can assure Mr. Bartlett that the diagnosis of "minor ailments" is not so easy a matter as he imagines.

31, *Weymouth Street*, Arthur P. Luff, M.D.
Cavendish Square, W., October 27, 1896.

"The Aim of Preliminary Education."

Sir,—To a great many of the readers of Mr. Carter's address and the correspondence which it has so far elicited, it must have appeared that in its most essential features it was more curious than convincing. Even from the point of view of a student of etymology it cannot be said that he attacked the subject in its most vulnerable points. At the very most he succeeded in showing that an antiquarian knowledge of the construction of words may usefully subserve the employment of any language. That this kind of knowledge is essentially subordinate must appear to any student of a good analytical work. Take, for instance, Abbott's excellent 'Shaksperean Grammar,' from which it will appear that in so far as influencing the faculty of language is concerned, the authors of such fairly earn the title of "harmless drudge" so significantly used by Samuel Johnson, while the motto of the dictionary makers continues to be now as then.

"If Custom please; at whose disposing will
The power and rule of speaking resteth still."

The faculty of language, with which we are all in such varying measure endowed, is essentially an artistic one, and as such depends for its cultivation far more on a good vocabulary, a large acquaintance with the best forms of literary expression, together with an intimate knowledge of Greek and Latin, than on any of the sciences (strictly speaking) whatever. There are hundreds of sentences to be met with in good literature which would not submit to strict analysis, any more than some of the convenient and otherwise unexceptionable forms of words to which Mr. Carter takes objection. Many words after being adopted into a language undergo the most subtle changes of meaning, and in the case of compound words, there is not infrequently a redundancy, as between some particle of speech and its neighbouring prefix in the same passage, which makes consistent criticism impossible.

By way of giving a little point and practical application to what is after all the main object of this discussion, perhaps you will permit me to ask why so many disgraceful specimens of English translation, in the form of directions for use, are allowed to circulate with packages of foreign goods. Are English merchants equally careless with regard to articles which they export? Because one would imagine that agents and correspondents of any house in different parts would be only too glad to see that printed instructions were submitted to their customers in the best literary form. The latest of these "dictionary" translations which I have now before me is quite one of the worst and most unintelligible I have seen. It relates to a spray diffuser, and after the manner of many of the worst forms of illiteracy, it contrives to include a word which few probably of your most learned readers have ever seen, viz., oppilation, in referring to the obstruction sometimes caused by particles of matter in the tube. But the majority of your readers will no doubt agree that the credit of reproducing such a word is sadly outweighed by the discredit attaching to its literary environment.

October 26, 1896. Scotch Chemist (62/5).

Sir,—Next in importance to a thorough knowledge of our language comes accuracy in quoting it, and this, the obvious duty of every controversialist, has been overlooked by Midlothian (61/17), in his blind hurry to attack. The first quotation he garbles, and the last he misapplies, for, with a delicious affectation of superior knowledge, he proceeds to imform us that around "simply means around." The remainder of his inverted commas are placed over words and phrases which have not been used by either Mr. Carter or myself. As for the point in dispute if instead of "like a ring fence," I had said "like quills upon the fretful porcupine," it would perhaps have brought out more clearly that *under* such circumstances, it is not imperative to say "in." It does seem passing strange that both your correspondents should commit the same kind of mistake, for Mr. Gibson might be sure his closing remark would be reckoned too good for me to be allowed to miss seeing it. My first thought about it was, how clever, but my second, how careless! As a would-be critic he ought to have noted the difference between "greatest men" and "great men," which I proposed as a substitute. Had not my own copy long since "gone a-missing," as the Scotch say (with them a thing is never lost), I should like to have given what Cobbett says on the muddled use of degrees of comparison. It was open to Mr. Carter to say "her greatest men" or "the majority of her great men," but he is not allowed to pile one term on the other, like Pelion on Ossa. So much for grammar! Now for the fact. Education, by whatever method, can only draw out qualities already existing in small boys; it cannot implant them. Hence it is that "we give education to small boys," hoping they may become "great men—sometimes," good men—at all times, but inaccurate men—never!

Ely, October 26, 1896. Lincolne, Sen.

Sir,—I would like to point out to your correspondent "Medicus that the use of the words "red ochre" is not so faulty as he fain would have it. In a Pantalogia, dated 1813, I find ochra described as "from the Greek word meaning pale, because it is often of a pale colour; ochre, an argillaceous earth impregnated with iron—of a red or yellow colour."

A more ancient writer, some hundred or more years before, describes ochre as "a yellow or blue earthy substance used in painting."

'Ogilvie's Dictionary,' 1893, describes ochre as "a kind of fine clay used as a pigment—of various colours, yellow (which is most common), red, green, blue, and black." 'Smart's Dictionary,' 1836, says, "Its most prominent colours are red, yellow, and brown." The French word "ochre" has the same meaning.

Red ochre can scarcely, therefore, be called "a verbal contradiction." It merely means a red-tinted "pale earth," as distinguished from a yellow, blue, or brown pale earth of a like composition. Mr. Brudenell Carter's address is beyond all praise, and chemists, being men whom the world (falsely enough sometimes) supposes to be educated, should especially attend to and take to heart his remarks. We shall then perhaps have less of the vile "Journalese" which they spawn over their circulars, etc., in mistake for English, and less of the mispronounced jargon and flippant vulgarisms which sully their correspondence and conversation.

811, *Fulham Road, Fulham, S.W.* Wm. Luther Longstaff.

Benevolent Fund.

Sir,—At a committee meeting of the Brighton Junior Association of Pharmacy, held on the 19th inst., a suggestion, unanimously carried, was brought forward by one of our members, that in order to help on the work of the Pharmaceutical Society's Benevolent Fund, other associations would do well to follow our initiative by placing a contribution box in aid of the aforesaid Fund on the table at their meetings. It is a means of catching the small pence or those who are not always willing or able to afford a subscription of donation in a lump sum, and it serves the purpose of compelling non-subscribers (as well as subscribers) to support the Fund, whereas otherwise they would not do so. We find the best *modus operandi* to adopt is, that the Treasurer or Financial Secretary stand at the door and solicit a trifle towards this grand institution from each member as he emerges from the room. It pays, for nearly every person button-holed gives something, some a penny, others more, according to their means, thus increasing the Fund by "homœopathic doses."

As an example, our contribution box has been in existence just over three years, and during that time it has collected £20, which has been forwarded to the Secretary, Bloomsbury Square. We assert that that sum would not have been obtained by any other means, and if that box had not been in existence, would not the Benevolent Fund have been the poorer? We think it would. Therefore, let other local societies follow our example and do their best to swell the funds for this most worthy object, especially as the demands upon it increase year by year in inverse proportion to the donations and support at hand.

It is not a bad suggestion, and if it be adopted by even our Society, the Benevolent Fund would be greatly benefited thereby.

Brighton, October 26, 1896. C. A. Blamey, Hon. Sec.

Bristol's Sarsaparilla.

Sir,—Noticing in your esteemed paper of recent date a correspondent's inquiry as to where Bristol's sarsaparilla may be obtained, we beg leave to state that it can be had at all times at the drug house of Messrs. Francis Newbery, and Sons, or at our agents, Messrs. Fassett and Johnson, 32, Snow Hill, E.C.

New York, October 17, 1896. Lanman and Kemp.

OBITUARY.

Franks.—On October 20, Alfred Franks, Chemist and Druggist, of Ramsgate. Aged 78.

Stewart.—On October 20, Alfred Stewart, Pharmaceutical Chemist, of Great Yarmouth. Aged 65.

Baxter.—On October 23, at Bromley, Kent, the wife of William Baxter, Pharmaceutical Chemist, of Marlow, Bucks. Aged 67.

Codd.—On October 23, Francis Codd, pharmaceutical chemist, of Devonport. Aged 57. Mr. Codd acted as the Local Secretary of the Pharmaceutical Society for Devonport from 1876 until the end of 1890. He was highly respected by all who knew him, both as a chemist and townsman.

ANSWERS TO QUERIES.

[*Queries addressed to the "Editorial Department, 17, Bloomsbury Square, W.C.," will be replied to in the Journal as early as possible after receipt, but the Editor cannot undertake to reply to them through the post, nor is it always possible to publish answers the same week. Questions on different subjects should be written on separate slips of paper, each of which should bear the sender's name or initials. Readers requiring working formulæ for special preparations, and intimating their wants to the Editor, will be assisted as far as may by practicable. The word "parts," when used in formulæ, invariable indicates parts by weight. Anonymous queries will be ignored.*]

Photo-Micrography.—They appeared in the issues for July 4 and August 22. [*Reply to* W. A.—62/17.]

"Navigantine."—A preparation bearing this name appears in the list of proprietary medicines published by W. Sutton and Co., 76, Chiswell Street, E.C. [*Reply to* Enquirer.—61/28.]

Preparation of Microscopic Objects.—Cross and Cole's 'Modern Microscopy' (Baillière, Tindall and Cox, 3*s.* 6*d.*) is a suitable book for your purpose. [*Reply to* Lancastrian.—62/16.]

Chemistry of the B.P.—Gerrard's 'Elements of Materia Medica and Pharmacy' (Lewis, 8*s.* 6*d.*) gives information of the nature you require, and could hardly be improved upon for your purpose. [*Reply to* Bro. Pills.—61/33.]

Dull Black for Metal.—The best dead black surface is got by mixing drop black ground in turpentine with a little japanners' gold size, and then thinning with turpentine to the desired consistence. The gold size is added to prevent the black rubbing off when dry, but you must be careful not to add too much, else the finished surface will be shiny in places. If, however, you prefer a varnish, procure something of the nature of Berlin black. You would find it difficult to make anything of the kind. [*Reply to* C. B. H.—62/9.]

Status of Major Men.—Is not the matter you complain of one that can best be dealt with by those to whom the advertisement appeals? No one is bound to accept any situation against his inclination, and if every Major man were of the same mind as yourself the grievance would remedy itself. If some "black sheep" has no objection to the condition you refer to, you can only pity his lack of taste. And, seriously, how in the world can the "influence of our Society" be brought to bear "on our status in this matter"? [*Reply to* Major.—62/14.]

ANONYMOUS COMMUNICATIONS.

In no case can any attention be paid to letters intended for publication, or requests for information, unless they are verified by the names and addresses of senders.

PUBLISHERS' NOTICE.

READING CASES.

Cloth gilt-lettered covers, with strings, to hold twenty-six numbers of the *Pharmaceutical Journal*, may now be obtained from the Publishers at a charge, including postage, of 2*s.* 6*d.* each.

COVERS FOR BINDING.

Cloth gilt-lettered covers for binding the half-yearly volume of the *Pharmaceutical Journal* are supplied by the Publishers, at a charge, including postage, of 1*s.* 6*d.* each.

All Orders and Remittances should be Sent to the Publishers, 5, Serle Street, London, W.C.

Communications, Letters, etc., have been received from Messrs. Alexander, Allan, Baxter, Blackburn, Blamey, Bramley, Brodie, Chalhoub, Cox, Cummings, Gaul, Gibson, Giles, Grimes, Guyer, Haensel, Hardy, Hill, Jackson, Lillard, Lucas, Luff, Marsden, Matthews, McKellar, Nash, Oldham, Parkinson, Pearson, Reynolds, Smalley, Squire, Trapp, Watson.

SHERRY WINE.

BY E. W. LUCAS, F.C.S.

The Pharmacopœia directs that the sherry wine used in the preparation of the official wines shall contain about 17 per cent. of absolute alcohol. In the 1867 edition the strength was even somewhat higher—17 to 18 per cent. It is not specified whether these percentages are by volume or by weight, but I am inclined to believe that the latter was intended, as I find it stated by Christison and others that sherry wine contains between 13·9 and 16 9 per cent. by weight of absolute alcohol.

Having occasion to purchase sherry for pharmaceutical use, samples were obtained from importers of good standing, and the wines submitted to analysis. The following table gives the results in percentages by weight:—

No.	Specific gravity.	Absolute alcohol by weight.	Volatile acid reckoned as acetic acid.	Fixed acid reckoned as tartaric acid.	Extract not quite dry.	Sugar.	Ash.
1 ..	1·008	15·45	·04	·21	6·30	3·60	·52
2 ..	·995	13·00	·05	·19	5·50	not dete.mined	·33
3 ..	·986	13 80	·02	·31	3 00	,,	·34
4 ..	·994	15·40	·03	·31	5·20	,,	·30
5 ..	·9 8	11·69	·09	·45	5·80	3·40	·35
6 ..	·996	13·90	·27	·50	5·30	3·02	·42

Nos. 2, 3, 5, and 6 were all sound natural sherries, costing from £10 to £18 per quarter cask of twenty-seven gallons, and were guaranteed to be just as imported. Nos. 1 and 4 had been fortified in this country by the addition of alcohol. On making enquiries respecting the importation of sherry, I was informed that "still" wines containing less than 12 per cent. by weight of absolute alcohol paid 1*s.* gallon duty, while wines containing over 12 per cent., but not over 17 per cent., paid 2*s.* 6*d.* gallon duty. The Excise appear to limit the strength of imported sherry to 17 per cent. by weight of alcohol, but the importers told me that natural sherries never came up to this strength, but were more generally about 13 or 14 per cent. I was moreover informed that if any very conscientious pharmacist insisted on having a wine containing the full amount of alcohol—viz., 17 per cent.—it was the custom of the trade to fortify it by the addition of rectified spirit before sending it out.

The United States Pharmacopœia, which recognises home-grown wines of two kinds, requires an alcoholic strength of 10 to 14 per cent. by weight. It appears to me that our own Pharmacopœia standard was either fixed rather high or else the sherries of the present day are made to contain less alcohol than formerly, and I would now suggest a reduction of the standard in the next Pharmacopœia. It would also appear desirable to include a more detailed description of the wine, as well as tests for purity, etc.

The following is suggested:—

Characters and Tests.—A pale, yellowish-brown Spanish wine made by fermenting the juice of fresh grapes freed from seeds, stems and skins.

1. The specific gravity at 60° F. should not be less than ·985, and not more than 1·010.

2. The residue when dried during twelve hours at a temperature of 212° F. should not be less than 2, and not more than 5 per cent. by weight.

4. One hundred C.c. should not require less than 5, and not more than 10 C.c. of normal potassium hydrate solution for neutralisation limit of free acid).

5. The wine should not contain more than 4 per cent. by weight of sugar.

6. The wine should not yield by distillation more than 14 per cent., or less than 11 per cent. by weight of absolute alcohol.

Sherry wine should not contain citric or free tartaric acids, and should be entirely free from salicylic acid, formaldelyde, or other added preservative.

As an instance of the variableness of a pharmacopœial preparation made with sherry, I procured five samples of iron wine from different west-end pharmacies, and examined them for alcohol and ferric oxide. The results are given below:—

	Sp. Gravity.	Absolute Alcohol by Weight.	Ferric oxide.
1	1006·2	10·00	·07
2	1012 3	12 00	·075
3	1027·6	10·00	·15
4	1006·5	11·50	·06
5	1002·8	9 00	·05

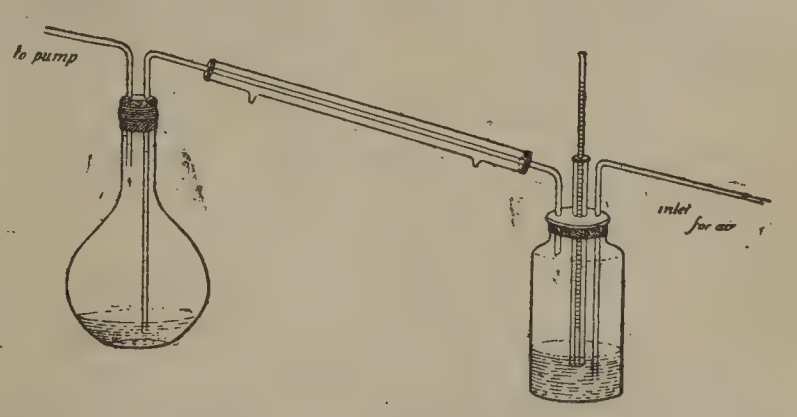
A SIMPLE METHOD FOR OBTAINING A LOW TEMPERATURE.*

BY C. EDWARD SAGE, F.C.S.

Having frequent necessity to observe the behaviour of oils and fatty acids at a low temperature, I have been led to construct a simple piece of apparatus which enables one to reduce the temperature of a sample in a very short space of time.

I venture to bring it before your notice because I believe its use to be capable of extension to many purposes, and a short description will suffice to explain its construction.

A six-ounce wide-mouthed flask or bottle is fitted with a good cork, which is to be pierced with three holes, one of which is to be large enough to admit a test-tube; the other two are for the admission of two glass tubes. The inlet tube passes to the bottom of the flask, and the exit one passes only a short distance through the cork. The flask is partially filled with ether, and the sample to be examined is placed in the test-tube together with a thermometer. Air is now forced into the flask by the inlet tube, and made to bubble



through the ether, whereby it exposes a large surface for evaporation, and as this takes place very rapidly the latent heat absorbed soon reduces the temperature of the sample. Instead of forcing air through the inlet tube, the exit may be attached to a Sprengel pump, and the air sucked through. To prevent the waste of ether as far as possible it is preferable to attach the exit tube to a condenser, through which water is running, and to wash the air sucked through by means of cold water in a wash-bottle; this water will on subsequent warming yield a small quantity of ether, but the larger proportion is kept back by the condenser.

I have had several of these freezing bottles in use during the past summer, and found no difficulty in maintaining a temperature of −4° to −5° C. for a long period, even during the hottest weather, and if the test-tubes were filled with water it was converted into ice in a few minutes, with the expenditure of very little ether.

* Read before the Chemists' Assistants' Association (London).

DOCTORS' BILLS IN THE OLDEN TIME.

A hundred years ago doctors' bills were not the things of dread they now often are, and some that have recently come under notice will afford ground for surprise to many readers of the Journal on two grounds—first, because the items are all clearly specified; second, on account of the extreme moderation of the charges. The practitioner—Isaac Dobell by name—lived at Golford, and practised in the parish of Cranbrook, Kent, where he had a great reputation in his day for the treatment of small-pox, being known for miles around as a "small-pox doctor." He also performed inoculation, and his favourite mixture after that operation appears to have been a saline febrifuge, followed by a Peruvian bark mixture during convalescence. But to come to the bills. These are all written on somewhat scrappy pieces of paper, and in a much clearer style of handwriting than our medical advisers employ to-day as a rule. It may be noted, by the way, that none of the accounts appear ever to have been settled. Perhaps the total amounts were too small for consideration.

The first is chiefly remarkable for the low fee charged for visits The patient lived at Staplehurst, a few miles distant, and had probably been anticipating Christmas and the over-indulgences associated with that festive season, or may have been preparing for Yuletide fare.

1780. Mr. Relf, Dr. to Isaac Dobell.

		s.	d.
Octobr. 1.	To Visit to his Daughter Mary	1	0
	To Cathartic Mix.	1	0
2.	To Visit to Do.	1	0
	To ℥iiij. Saline and Anodyne Mix.	1	6
	To paper of Cathartic powd.	0	3
3.	To Visit to Do.	1	0
6.	To Visit	1	0
	To paper of Cathartic powd.	0	3
		7	0

Number two might have been measured off a reel, being thirteen inches long and but four wide. The patient in this case appears to have lived nearer than the former one, for the price per journey is reduced by half. This makes it extremely moderate, for surely no one could reasonably object to paying sixpence for a doctor's visit. Besides not paying his bill when rendered, Mr. Chittenden seems to have borrowed money of his doctor's wife, and the footnote indicating the amount thus added to his indebtedness professes to be signed by him, though the handwriting is much the same in style as the rest. This transaction, it will be observed, took place more than five years after the doctor had done his work, a most unreasonable length of time for an account to remain unpaid one would think. But here the wife of the long-suffering doctor actually lends money to the debtor after all that length of time, or it may be—though scarcely probable—that she let him have goods to the amount specified.

1782. Mr. John Chittenden, Dr. to Isaac Dobell.

		s.	d.
April 13.	To Cathartic pills	0	6
15.	To Journey to Do.	0	6
	To two Emetic to Do.	0	9
	To Anody. Draught	0	6
	To ℥viij. Saline Mixture	1	6
16.	To ℥viij. Peruv. Mixt. Compd.	2	0
	To Journey to Do.	0	6
17.	To Journey	0	6
	To ℥viij. Mixt. rept.	2	0
18.	To Journey to Do.	0	6
19.	To Journey	0	6
20.	To ℥viij. Mixt. repet.	2	0
	To Journey	0	6
21.	To Journey	0	6
	To Anody. Draught	0	6
	To viij. Mixt. rept.	2	0
April 22.	To Journey	0	6
24.	To ℥viij. Mixt. rept.	2	0
27.	To Journey	0	6
May 6.	To ℥viij. Saline and Anody. Mixt.	1	6
	To ℥viij. Peruv. Mixt. Compd.	2	0
	To Drops to Do.	0	2
7.	To Journey	0	6
	To ℥viij. Mixt. rept.	2	0
8.	To Journey	0	6
9.	To Journey	0	6
10.	To ℥viij. Mixt. rept.	2	0
	To Journey to Do.	0	6
11.	To Journey	0	6
13.	To ℥viij. Acid Julap	1	6
	To Journey to Do.	0	6
		£1	10 5
	Due to Mrs. Dobell	0	14 3

This Day, October 26, 1787. Jno. Chittenden.

The reason of the evident delay in making up and rendering the bill of Mr. James Beech seems to be indicated at the foot, beef having been taken in contra account apparently. But what a price for beef! The "More Do." is distinctly good, and indicates that the doctor or his bookkeeper had an aversion to excessive repetition, except, perhaps, of beef.

1785. Mr. James Beech, Dr. to Isaac Dobell.

		s.	d.
June 7.	Bleeding Do.	0	6
17.	Ingredients for Tinct.	1	6
1788.			
Augt. 29.	Journey	1	0
	Anody. feb. Mixt.	1	0
	Emetic Mixt.	1	0
Sept. 2.	Journey	1	0
	Saline Anody. feb. Mixt.	2	0
	Balsa. Mixt., ℥viii.	1	9
		9	9
	One stone of Beef at 3½ per lb.	2	4
	More Do.	2	4

Medicine only is charged in the next instance, presumably an inoculation case.

1791. Mr. George Ransly, Rucking, Dr. to Isaac Dobell.

		s.	d.
June 19.	To ℥viij. Acid febril. Mixt. to his Wife	2	0
	To Do. Cort. Peruv. febril.	2	0
	To Do. Anody. Cord. Mixt.	2	0
	To ℥. Anody. Tinct.	1	6
		7	6

The word "Hithe" in the superscription of Mr. John Smith's bill has been spelt "Hythe" at first but afterwards altered. On the back of the account, however, the "y" is retained.

1792. Mr. John Smith, Postling, nr. Hithe, Dr. to Isaac Dobell.

		s.	d.
Decem. 22.	To Box 36 pills	2	3
	To ℥v. Lotion for Cancer	3	6
	To large Box of Cerate	1	6
	To ℥i. Anody. Tinct.	1	0
		8	3

Journeys to Benenden, which is nearer than Staplehurst, were charged eighteenpence each. But this was fourteen years later. Elizabeth seems to have required variety in treatment, and the "Saline Oily Bals. Mix." is horribly suggestive of something unusually disagreeable in the shape of physic.

1794. Mr. Worsley, Benenden, Dr. to Isaac Dobell.

		s.	d.
Jany. 12.	To Journey to Elizh.	1	6
	To two Emetic powders	0	8

		s.	d.
Jany. 12.	To ℥v. Saline Acid Mixt.	1	6
	To Do. Anody. Cord. Mixt.	1	6
	To ℥iij. Anody. Balsa. Mixt.	1	6
13.	To 8 papers of powders	1	6
	To ℥ij. Saline Oily Bals. Mix.	1	6
	To Journey to Do	1	6
14.	To Journey Do.	1	6
	To ℥viij. Cort. Peru, Anody.	2	0
15.	To Journey	1	6
21.	To Journey	1	6
		17	8

Later in the same year another member of the Benenden family comes under treatment, unless indeed "Sally" is but "Elizabeth" writ short. If so, she had a fair selection of medicaments in the course of the year, and ought to have recovered if she did not die from over-attention on the doctor's part.

1794. Mr. Worsley, Benenden, Dr. to Isaac Dobell.

		s.	d.
Sepr. 12.	To Box of pills to Sally	1	2
	To ℥vj. Anody. Cord. Mix. to Do.	2	0
	To journey to Do.	1	6
	To ℥ij. Carthartic Mixt.	1	0
	To Blister Do.	0	9
	To Box of Basilicom	0	5
	To ℥v. Saline Embroca.	1	6
	To ℥i. Volat. Anody. Do.	1	0
	To Do. Volat. Tinct.	1	0
Nov. 9.	To large plaister Do.	1	6
		11	10

In the following statement we have a premonition of the custom of later days, no items being specified. Perhaps, however, the account was longer overdue than usual, for it is possible to conceive that a century ago even a general medical practitioner may have emulated the worm and turned, after his bill had remained unpaid for, say, seven years. Of course there was no Statute of Limitations in those days, so it may have run to ten years or more :—

Mr. William Evens, Dr. to Isaac Dobell.
To Journeys and Medicines for his wife from
April 18, 1793, to August 13 of Do. .. £3 12 0

Finally, we come to a definite mention of inoculation, the charge for which, presumably because of the novelty of the thing, was fairly high. Nevertheless, the doctor was not an unreasonable man, being seemingly content to receive payment in moderate instalments.

Mr. Lever, Biddenden, Dr. to Isaac Dobell.

		s.	d.
1800.			
Feby. 6.	To Box of 36 pills	2	3
	To ℥iiij. salts	0	6
	To Box of Basilicom	0	6
	To Dressing Toe	0	3
9.	To Do.	0	3
	To ℥ij. Sal. Oily Embro.	1	0
May 23.	To Emetic	0	6
24.	To ℥viij. Anody. Cord. Mix.	2	0
30.	To Sal. Acid febril.	2	0
	To ℥ss. Anody. Tinct.	1	0
1801.			
Jany. 18.	To Inocculating Son	5	0
		15	3

Received in part 11s. 6d.

One thought that suggests itself after perusing these interesting relics of a byegone century and its customs, is that Isaac Dobell must have been a careful doctor. A man who would write down so clearly and painstakingly all the petty items supplied to his patients must of a surety have been equally careful in his treatment of disease. Fully abreast of his time, too, these records show him to have been, and withal a successful specialist. Peace be to his ashes!

BOTANIC GARDENS OF THE WORLD.

III.—LONDON PUBLIC GARDENS—REGENT'S PARK.

In the year 1839, the Apothecaries' Garden at Chelsea and the Horticultural Society's Garden at Chiswick were in their prime, and botanical fêtes for twelve years had been held annually at the latter place. The Royal Gardens at Kew, taken over by the Commissioners of Woods and Forests in 1840, were as yet private gardens belonging to the Royal Family. It was, however, felt by many botanists and horticulturists that a botanic garden nearer to the centre of London was a desideratum, and they succeeded in getting a Royal Charter "for the promotion of botany in all its branches, and its application to medicine, arts, and manufactures, and also for the formation of extensive botanical and ornamental gardens within the immediate vicinity of the metropolis." This Charter was granted to the Duke of Norfolk, the Duke of Richmond, who became the first President of the Society, the Earl of Albemarle, Lieutenant-Colonel Rushbrooke, Philip Barnes, the first promoter of the Society, and James de Carle Sowerby, the first secretary.

At this time the Inner Circle of Regent's Park was a nursery garden, known from the name of its proprietor as Jenkin's Nursery. In area, about eighteen acres, this ground consisted of a nearly level plateau, rising gently from the circumference to the centre. While the centre point is 129 feet above mean sea level, the road at York Gate is 96 feet. When it was taken over by the Society, the circumference was determined by a belt of good-sized elm trees. A lawn with a group of trees at the extreme west, an inner circle of small birch trees, four or five old elms near the reservoir of water, a general nursery stock planted about the remainder of the ground, two old greenhouses, a wooden and brick cottage, and a few sheds formed the unpromising, unpicturesque foundation of the present botanical and ornamental gardens.

The Society started by offering a prize for the best plan for laying out the garden in a manner at once picturesque and suitable for scientific purposes. Hints were taken from the prize design, but on the recommendation of Mr. Loudon, Mr. Marnock, the Curator of the Sheffield Botanic Garden, was invited to become the Society's Curator and to lay out the ground. So well was this done that it is difficult to realise that the contour, undulations and general design of the landscape are all artificial.

The first operation was to clear the ground. The lake and mound were then formed, and the very heavy yellow clay of which the garden is in the main composed was drained. The terrace at the north on which the conservatory now stands was then formed. The first iron house of any size in England, it was designed and built by Turner of Dublin in 1845. The whole of the heating apparatus is underground, the entire area being thus unimpeded by hot water pipes, though a certain amount of heating power is lost thereby.

Behind the conservatory was constructed the exhibition ground, with its winding walks and grass banks for grouping the plants, in substitute for the old practice of green baize staging under long, narrow tents. This too, was a novelty, and it was found very difficult to deal with the large area of canvas in one sheet alone when a stiff wind was blowing.

While the general planting of the ground was that of an English landscape garden, other groupings of trees and shrubs were made to constitute an arboretum. On the west was a spring garden, well protected from cold winds by a band of shrubs. On the north-west were an American garden, an Italian flower garden, a rosary, and an agricultural department. The rosary was given up eventually, owing to the increasing difficulty of growing roses in a comparatively confined and soot-laden atmosphere. Agriculture, too, was

found to require more space than the garden could well devote to it, in view of the ever increasing number of medicinal and economic plants.

On the east is the garden of herbaceous plants, arranged according to the natural system of classification—the orders being grouped together in their natural affinities. Mr. Sowerby in his 'Short History of the Society and its Gardens,' which forms the basis of this paper, says:—"This mode of arrangement was also a novelty of its time, and even up to the present (1888) has been seldom copied. The form of placing of herbaceous plants in scientific arrangements in botanic gardens is usually in straight uniform beds or borders, but in this case the plants are grouped in beds of all shapes and sizes, allowing the natural orders also to be grouped together as most nearly related in class, if we may use the term, and thus more easily compared."

Between the conservatory and herbaceous garden is the department devoted to medicinal and economic plants, comprising a glass-house which is maintained at three distinct temperatures, beds of herbaceous and economic plants, and economical and medicinal esteemed shrubs. This side of the garden is specially devoted to study, and is largely frequented, the number of free student's tickets issued of three months' duration being from six hundred to eight hundred annually, while the cut specimens given for study range from sixty thousand to seventy thousand per annum. Besides the large conservatory there is a warm water tank for the *Victoria regia* and other water plants, an orchid house, warm and cool fern houses, alpine frames, and adjacent ranges of stoves, workshops, propagating houses, plant houses, hospital and potting sheds. The museum is used as a lecture and reading room, and attached to it there is a small botanical library, open every day till sunset.

In the centre of the herbaceous garden are the principal meteorological instruments, the sunshine recording instrument being on the tower on the mound. Of special interest to gardeners and agriculturists is a range of earth thermometers, from three inches to sixteen feet deep. Daily records of all the instruments are kept from observations taken three times a day.

From the time of its origin the Queen has been the patron of the Royal Botanic Society of London. The Duke of Richmond was its first President and was succeeded in 1842 by the Duke of Norfolk. From 1856 to the time of his death the Prince Consort was President and very frequently visited the gardens. The present President, the Duke of Teck, succeeded Lord De la Warr as President in 1869.

The exhibitions or flower shows of the Society were started in 1843, and there are often present as many as twenty thousand visitors. The exhibitions at the Society's evening fêtes originated in 1872, and were started with the view of popularising the employment of plants and flowers in house and table decoration.

Courses of botanical lectures open to Fellows and Members of the Society and also to all visitors in the garden at the time, are given during the summer in the museum in the gardens.

In June, 1880, considerable excitement was caused by the discovery in the tank devoted to the cultivation of the *Victoria regia* and the other aquatics, of an entirely new species of *Medusa*. Numbers of these fresh-water jelly fish were discovered on June 9 swimming about in groups in different parts of the tank. Living specimens were given to Professor Flower, Professor Mivart, Professor Ray Lankester, Dr. Romanes, and other authorities, who, after investigation, determined to give the new *Medusa* the name of *Limnocodeum sowerbii*.

The generic name Pond-bell originated in the general form of the *Medusa*, which resembles a small shallow, nearly hemispherical bell, almost as transparent as glass, with tentacles of a beautiful opalescent white, which are extended outwards when the animal is floating, instead of hanging from the bell as in most other members of the group. The size of this *Medusa* varies with age, some individuals are as small as pins' heads, while full-grown adult species have been seen as much as half an inch in diameter. The marginal ring bears three sets of rings, tentacles, and the stomach is long and tubular, extending below the disk. The mode of progression is by the sudden contraction of the ring, and its activity is undetermined by the temperature of the water in which it is placed. At a temperature of 85° F., the temperature at which the water in the Victoria tank is kept, the pulsations reach 180° F. per minute, but when the temperature is reduced to 65° F. the maximum rate falls to 80° per minute. Though a temperature of 70° F. is fatal to all the marine species, this fresh-water species only succumbs to a temperature of 100° F. On the other hand this *Medusa* is completely destroyed by freezing, while marine species will bear to be frozen solid. It is also much less able to stand the transfer from fresh to salt water, after one minute it dies, while the marine species will live for five minutes under similar circumstances. This *Medusa* appeared every year up to 1892 but not since.

Plants and seeds are continually being sent to these gardens from all parts of the world, from which many interesting novelties have been raised, *e.g.*, a collection of Chinese culinary vegetables. Free admissions of from one month to three months in duration are from time to time issued to artists and students, and these seem to increase in number from year to year.

PHARMACEUTICAL SOCIETY.

MEETING OF THE COUNCIL.

WEDNESDAY, NOVEMBER 4, 1896.

Present:

MR. WALTER HILLS, PRESIDENT.

MR. JOHN HARRISON, VICE-PRESIDENT.

Messrs. Allen, Atkins, Bateson, Bottle, Carteighe, Corder, Cross, Gostling, Grose, Hampson, Martindale, Newsholme, Savory, Southall, Symes, and Young.

The minutes of the last meeting were read and confirmed.

The PRESIDENT said he had received a letter from Mrs. Betty thanking the Council for its expression of sympathy with herself and family on the death of Mr. S. Betty.

DECEASE OF TWO CORRESPONDING MEMBERS.

The PRESIDENT said he had to report the death since the last meeting of two distinguished corresponding members, viz., Baron Ferdinand von Mueller and Dr. Henry Trimen. Both men were distinguished in one particular branch of science, botany; they were both excellent corresponding members of the Society, and did all they could to advance its interests. Dr. Trimen was co-author with the late Dr. Bentley of the well-known work 'Medicinal Plants.' They would all agree with him that the Society had lost in these gentlemen two very distinguished men.

THE LATE DR. LANGDON DOWN.

The PRESIDENT said he had also to express his regret, and he was sure that of the Council also, at the death of Dr. Langdon Down, one of the distinguished honorary members of the Society. Dr. Langdon Down in his early days was closely associated with the Society, and was a distinguished pupil and prizeman. Since those early days Dr. Down had always kept up an association with the Society, and had shown in many ways his sympathy with the work it was carrying on. Dr. Down had been an honorary member since 1866, and he (the President) was sure the Council would authorise him to write to Mrs. Down expressing to her and the members of her family their sense of the loss the Society and the medical profession generally had sustained in the death of so distinguished a man.

Mr. ATKINS asked permission to add a few words. From the year 1851 he had had the honour of the very warm personal friendship of Dr. Langdon Down. He first became acquainted with Dr. Down in a very curious way. Both he (Mr. Atkins) and the

late Dr. Down were as young men visiting the Exhibition of 1851, and while looking at a case of chemicals exhibited by Morson they got into conversation, having at that time been strangers to one another. From that day in 1851 down to the day of his death he (Mr. Atkins) held Dr. Down to be one of his choicest friends. There was not a professional man in London who was more intensely loyal to the interests of the Society than the late Dr. Langdon Down.

Mr. CARTEIGHE, in adding a few words to the President's expressions of regret, said that he and Mr. Bottle were the only members of the Council who were present when Dr. Down was elected an honorary member of the Society thirty years ago. Dr. Down was nominated by Mr. Orridge, who took a great interest in educational matters, in the sense of trying to educate the numerous people who came to him for professional advice. Mr. Orridge pointed out the advantage of belonging to the then Pharmaceutical Society, and of obtaining for their assistants a good education. In those days the nomination of honorary members was done in open Council, on a direct motion from a member, and Mr. Orridge asked the Council to elect Dr. Langdon Down an honorary member, not on the score of having done original work in connection with chemistry, botany, and materia medica, but from his having been one of the earliest pupils in the Society's School, where he had distinguished himself, and having gone into the world of medicine a credit to the craft from which he sprang. In addition to his active professional life Dr. Down was associated with every movement, social and educational, connected with the Society down to the last day of his life. Dr. Down's cheque-book was always produced for the assistance of any distressed member who was not quite eligible for direct benevolence. Besides being one of the handsomest men who walked through the streets of London, the late doctor was also a very manly man.

A resolution authorising the sending of a letter of sympathy to the widow was carried unanimously.

ELECTIONS.

Member.

David Scurlock, of Pentremeurig, having passed the Major examination and tendered his subscription for the current year, was elected a "Member" of the Society.

Associate in Business.

Jabez Swindale, of Blackhill, having passed the Minor examination, being in business on his own account, and having tendered his subscription for the current year, was elected an "Associate in Business" of the Society.

Associates.

The following, having passed the Minor examination and tendered (or paid as "Students") their subscriptions for the current year, were elected "Associates" of the Society:—

Chapman, James; Bathgate.
Davies, William Henry; Cardigan.
Duck, Frederick Edwin; Hull.
Harris, John; Torquay.
Hawley, John William; Liverpool.
Johnson, William Danily; London.
Roberts, Haworth; Bowdon.
Walton, Thomas Robert; Cardiff.
Wilson, Harold Oates; Nottingham.

Student.

Thomas William Almond, Stockton-on-Tees, having passed the First examination and tendered his subscription for the current year, was elected a "Student" of the Society.

Restorations.

Several persons were restored to their former status in the Society upon payment of the current year's subscription and a nominal restoration fee of one shilling.

FINANCE COMMITTEE.

The report of this Committee was of the usual character, and recommended sundry accounts for payment.

The PRESIDENT (as Chairman of the Committee), in moving the adoption of the report and recommendations, said there was nothing to which he need call special attention in connection with the General Fund. With regard to the Benevolent Fund, he was pleased to report that they had received the sum of £450 from the executors of the late Mr. Dudgeon, a life member, late of Nottingham, being a legacy of £500 less legacy duty. It was very gratifying to find members taking such an interest in the Fund and remembering it in their wills. He might also refer to a sum of £3 15*s.* 6*d.* which was received from the Brighton Junior Association of Pharmacy in May last, but which he regretted was not noticed at the time; and he took this opportunity of expressing the satisfaction he felt at finding that the younger members throughout the country took an interest in this excellent Fund. A sum of three guineas had also been received from the Edinburgh District Chemists' Trade Association, one-third of which was for the Orphan Fund. There was also a donation of five guineas from Mr. White, a member of the Board of Examiners. To all these gentlemen the Society was much indebted.

The resolution was unanimously agreed to.

BENEVOLENT FUND COMMITTEE.

The report of this Committee included a recommendation of grants to the amount of £104 in the following cases:—

The widow, aged 67, of a member who has had nine previous grants. (London.)

The widow, aged 61, of a registered Chemist and Druggist who had a similar grant last year. (Rotherhithe.)

The widow, age 63, of a Chemist and Druggist who is unable to work on account of the state of her health. (Crewe.)

A registered Chemist and Druggist at Hampstead, aged 83, who is blind.

A former Associate and member at Wimbledon, aged 71. He is out of employment.

A registered Chemist and Druggist at Cheltenham, aged 77, who is paralysed.

A registered Chemist and Druggist and subscriber to the Fund, aged 64, who has had two previous grants. (Southampton.)

A registered Chemist and Druggist, aged 73, who has had three previous grants, and had a small income, but not sufficient to maintain him. (London)

A registered chemist and druggist, aged 56, who was in business for thirty-five years, but had to give it up six years ago, and has been unable to do anything since, being nearly blind. (Soham.)

One other case the Committee declined to entertain.

The VICE-PRESIDENT said he rose with a considerable sense of responsibility to move the adoption of the report. It would be observed that the number of cases was larger than usual, and the character of them, if he might use the term, was somewhat phenomenal. There were ten cases before the Committee, including three widows, whose average age was 64, and the average age of six of the men was 71. One or two of the cases were of a particularly painful character. One poor man, 83 years of age, was totally blind. He was carrying on a very small business, which possibly he might have continued to carry on with what assistance he could obtain, and make an existence, if not a living; but his premises were required by the local authorities, and, being a weekly tenant, he had to leave before the end of the year. By the sale of his small effects it was hoped that he would be able to get a little home together, and that with the aid now given he might be quite as comfortable as he had been lately, and not be obliged to apply for parish assistance. The old man seemed to be of excellent character, and his present position was due to misfortune, and not in any way to any fault of his own. Another case was of much the same character, except that the man was younger. He had carried on business for some time, but the fierce competition to which he was subjected made it impossible for him to go on any longer. He was very nearly blind, but there was reason to believe that the grant made, with the assistance he might get elsewhere, would place him in, at any rate, comparative comfort. These cases were very heartrending, and, if they could be set forth in all their fulness, he felt sure that their brethren would respond more fully to the appeals of the Committee. He was bound to say that the Committee had gone a little beyond what prudence would have dictated, had it not been felt that, if the nature of these cases were known, a greater response would be made. Grants to the amount of £104 had been made, and the actual state of the Fund was now this. There was £422 in hand, and before the end of the year it was hoped that another £50 would be received, making £472, but of that sum £104 was now to be granted, and assuming that nothing were spent in December—a large assumption—£570 would be required the first week in January to pay the annuities, making a total of £674, or £200 more than could be reckoned upon as being in hand at that time. He mentioned this because he hoped some of their friends who had not hitherto supported the Benevolent Fund would come forward when they saw the need there was for additional funds, and determine that their brethren should not suffer for want of funds. The President had referred to a legacy of £500; it was not everyone who could follow that example, but if those who could not give large sums would contribute small yearly subscriptions, it would do a very large amount of good. He would also remind them that money given in this way was subject to no deduction on behalf of the State by way of duty, so that those who wished the Fund to

get the full benefit of their benefactions should make them whilst still living.

Mr. HAMPSON pointed out that the amount of the legacy would have to be invested.

The VICE-PRESIDENT said that was quite true; according to the bye-laws it must be placed to capital account, which helped to give stability to the Fund, and he was glad to see the capital account flourish, but what he was now pleading for was that owing to the urgency and number of the cases coming forward all who had it in their power should make some response to the appeals of the Benevolent Fund Committee.

Mr. HAMPSON asked to be allowed, at the risk of making himself a bore, to call attention to a paragraph in the Journal singling out for special notice one individual candidate for an annuity. He hoped such a thing would not occur again. He thought while there was a contest it should be as fair as possible, and there ought to be no urging of the claim of any particular candidate by any member of the Council.

Mr. BOTTLE asked what Mr. Hampson referred to.

Mr. CARTEIGHE suggested that the object of the Treasurer in making this protest would be frustrated by a discussion. He agreed with him that in a little excess of zeal the Editor had inserted a paragraph which had better have been omitted. As a rule one was inclined to deal lightly with anything of this kind when it arose from benevolent motives. It did seem a little remarkable that after the discussion had taken place a sort of gratuitous advertisement as it might be called appeared in favour of one candidate. It was obviously desirable that there should be only one place in the official journal for advertisements, and that was in the advertisement sheets themselves.

The resolution was then carried unanimously.

LIBRARY, MUSEUM, SCHOOL, AND HOUSE COMMITTEE.

The report of this Committee included the following details :—

Library.

The report of the Librarian had been received, including the following particulars :—

	Attendance.	Total.	Highest.	Lowest.	Average.
July	Day	363	21	3	11
	Evening	79	10	0	3
August	Day	53	6	0	2
September 15 to 30,	Day	96	15	3	7

Circulation of Books.	Total.	Town.	Country.	Carriage paid.
July	158	82	76	£1 0*s.* 3½*d.*
August	94	33	61	17*s.* 1½*d.*
September 15 to 30	115	69	46	17*s.* 3*d.*

Donations to the Library had been announced (*Pharm. Journ.*, October 17, p. 344), and the Committee had directed that the usual letters of thanks be sent to the respective donors.

The Committee had recommended that the undermentioned works be purchased :—

For the Library in London :—

Lassar-Cohn, Chemistry in Daily Life, 1896.
White, Flora of Perthshire.
Bloxam, Chemistry, 8th ed., 1895.
Clowes and Coleman, Quantitative Analysis, 3rd ed., 1895.
Gattermann, Practical Methods of Organic Chemistry, 1896.
Ramsay, Elementary Systematic Chemistry, 1891.
Addyman, Agricultural Analysis, 1893.
Fream, Elements of Agriculture, 1893.
Crookshank, Text-Book of Bacteriology, 4th ed., 1896.
Pearmain and Moor, Applied Bacteriology, 1897.

For the Library in Edinburgh :—

Everett, Elementary Text-Book of Physics.

The Librarian had reported that at the recent revision of the Library the under-mentioned works were missing :—

The Art of Dispensing, 1888.
Ince, Latin Grammar of Pharmacy, 5th ed.

He had also reported that Tait on Heat, missing 1895, and Bernthsen, Organic Chemistry, missing 1890, had been restored to the Library.

The Librarian had further presented a report on the annual meeting of the Library Association.

Museum.

The Curator's report had been received, and included the following particulars :—

	Attendance.	Total.	Highest.	Lowest.	Average.
July	Day	339	26	4	12
	Evening	30	4	1	
August		81	11	1	
September		148	13	4	1

Several donations had been received, and the Committee had directed that the usual letters of thanks be sent to the respective donors (*Pharm. Journ*, October 17, p. 344).

The Curator had submitted the first sheet of the catalogue of the Museum, and it was recommended that 1000 copies be printed.

School of Pharmacy.

The Secretary had reported that fifty-six students had entered the School, exclusive of the two Bell scholars and the Redwood scholar.

The Committee had appointed Mr. Carteighe to be Visitor to the School for the present session. It was ordered that all Staff meetings of the School be notified to the Secretary by the Dean.

The PRESIDENT, in moving the adoption of the report, said the Committee had a long meeting on October 14, after an interval of three months, and though there was a very interesting discussion, he had nothing specially to call attention to. Those of the Council who were not members of the Committee would no doubt have heard with satisfaction that the Secretary reported that fifty-six students had entered the School, exclusive of the two Bell scholars and the Redwood scholar. The Council had every reason to be satisfied with the figures, considering the new conditions under which they were working. Probably next year the Society would hardly be able to take the number of men in who wanted to attend the elementary course. The Council would also learn with satisfaction that the Committee had appointed Mr. Carteighe as Visitor to the School for the present session. It was thought desirable by the Council that they should be brought into the closest contact with the inner working of the School in every way, and it was arranged that a visitor—being a member of the Library and School Committee—should be appointed to act as the Council's representative to attend the meetings of the staff. They would all be agreed that no one could undertake the duty with more benefit to the Council than Mr. Carteighe, who had accepted the office for the next twelve months. One pathetic fact he would refer to was that among the donations to the Museum was one from Baron Ferdinand von Mueller, showing the vast interest he took in the Society.

Mr. MARTINDALE seconded the motion.

Mr. HAMPSON said the most interesting feature of the report was the acceptance by Mr. Carteighe of the position of Visitor to the School. He was quite sure that this appointment was an indication of the intention of the Council, by some means or other, to be kept thoroughly in touch with the education department. They must not allow the old condition of things to be re-established. Although they could not take part in all visiting and inspection, and in giving advice, they could do the next best thing—appoint someone who would keep them in touch with every detail of the educational establishment. It was only by such means that the Council could fairly carry on the work and keep their consciences clear in the matter. This institution he trusted would become not simply successful financially, but a pattern for similar institutions in England in future, and it would no longer be a source of regret that there was any weak point in their establishment. In conclusion, he trusted that they would be thoroughly ambitious, and that, although they were successful so far, they should look to every possible improvement in the School.

Mr. ATKINS wished to support Mr. Hampson's remarks. It was quite within the knowledge of all that in days gone by it had been under consideration whether they should cease to be an educating body. In his opinion, in the changes that had taken place there was every promise of progress and development. That being the case the appointment of a representative of the Council to attend the meetings of the staff was not a mere official mechanical act. He would not say more in Mr. Carteighe's presence than that in him they had a strong man, and a man who would fearlessly, as was characteristic of him, do his duty, and that they would have brought back to the Council the fullest and completest knowledge of the educational work of the institution.

Mr. CARTEIGHE said he should like to explain that the office he had accepted was subordinate and intended to assist the President. The President could do the work as well as he could, but he was

able to say from his own experience that it was impossible for the President, having regard to the enormous amount of detail work to be done in connection with this particular branch, to devote the necessary time to it. In accepting the office he felt that he was not doing anything more than helping to make the President's life a possibility.

The PRESIDENT wished to add that the appointment of a visitor by the Council was not in the least a mark of want of confidence in the members of the staff. The Council as business men considered that it was wise to have someone who should attend the meetings, and who should know the innermost working of the School. It was quite certain that for the next twelve months at any rate there would be no friction between the staff and the Visitor, for Mr. Carteighe was too much a man of the world to cause it.

The report was then put and carried unanimously.

REPORT OF EXAMINATIONS.

October, 1896.

The following report on the examinations was presented :—

	Candidates.		
	Examined.	Passed.	Failed.
Major (Scotland)	3	0	3
Minor (Scotland)	118	51	67
First examination	330	162	168

Nine certificates by approved examining bodies were received in lieu of the Society's examination.

It was resolved "That the Boards of Examiners in London and in Edinburgh meet to conduct the oral portion of the Major, Minor, and modified examinations in January, April, July, and October during 1897."

Mr. BATESON drew attention to the fact that the only three candidates in Edinburgh for the Major examination had failed, and suggested that it would be a saving of expense to pay their fares up to London, so that they might be presented there at the same time as the other candidates, rather than hold another examination for them in Edinburgh.

Mr. CARTEIGHE explained that the Major examination in Edinburgh was usually conducted at the same time as the Minor.

Mr. MARTINDALE, referring to the large number of failures, said he hoped the candidates would learn a lesson from them, as the fact of coming up and being rejected had a very demoralising influence. He thought it was a pity that candidates should come so unprepared. It was a feature not to be met with on the Continent; in Germany, for instance, there were not 10 per cent. of failures in the pharmacy examinations.

Mr. CARTEIGHE concurred in Mr. Martindale's remarks, and hoped that candidates would feel it was a disgrace to be ploughed. Unless men who were coming up for examination approached it with a feeling that from a professional point of view it was at all events a slight, if not a disgrace, so long would they continue to come unprepared.

RESEARCH COMMITTEE.

The following report had been presented :—

The Committee has met as usual once a month, as mentioned in the *interim* report presented to the Council last February, and has received reports from the Director as to the progress of the work of the Research Laboratory. During this Session there have been in all eleven workers in the Laboratory, including the Demonstrator—Dr. Jowett—the Salters' Fellow—Mr. Carr—and the Redwood Scholar—Mr. Harold Brown—some of whom have been engaged in preliminary operations, whilst others have conducted special inquiries under the supervision of the Director. The definition of the alkaloids contained in the various species of Aconite has occupied a large share of attention, and substantial progress has been made. The working expenses of this inquiry have again been defrayed by a grant made to the Director by the Council of the Royal Society from the Government Fund for Scientific Research. Much of the material used has been collected and forwarded to this country by the Government of India at the instance of the Scientific Department of the Imperial Institute. From the same source material has been provided for other inquiries which have been started in the Laboratory, but are not yet completed, as, for example, an examination of the constituents of *Podophyllum peltatum* and *Podophyllum emodi*, and of the alkaloids of the opium produced in India, with a view of determining the differences between it and Turkey opium, so that the question as to its exact medicinal value may be settled. Pure specimens of a number of alkaloids and other compounds have been specially prepared and supplied for physiological and therapeutical inquiries to Dr. Burdon Sanderson, F.R.S.; Dr. Waller, F.R.S.; Dr. Cash, F.R.S.; Dr. H. W. G. Mackenzie, and Dr. T. G. Brodie.

The following are the titles of the papers which have been published during the past Session :—

"The Detection of Aconitine," by Professor Dunstan and Mr. F. H. Carr (*Pharm. Journ.*); "The Estimation of Aconitine," by Professor Dunstan and Mr. T. Tickle (*Pharm. Journ.*); "The Action of Methyl Alcohol on Aconitine," by Professor Dunstan, Mr. T. Tickle, and Dr. D. H. Jackson (*Proceedings of the Chemical Society*); "On Atisine, the Alkaloid of *Aconitum heterophyllum*," by Dr. H. A. D. Jowett (*Proceedings of the Chemical Society*); "The Hydriodides of Hydroxylamine," by Professor Dunstan and Mr. E. Goulding (*Journal of the Chemical Society*); "An Inquiry into the Nature of the Vesicating Constituent of Croton Oil," by Professor Dunstan and Miss Boole, full paper (*Proceedings of the Royal Society*).

The Grant of £150 made by the Council of the Pharmaceutical Society has been expended in the following manner :—

Stipends of Demonstrator and Assistants	£90.
Laboratory Attendant	£24.
Petty Expenses and Materials.....	£36.

The remaining expenses of the year, chiefly those connected with the Aconite and Podophyllum investigations, have been defrayed by grants made by the Royal Society and by the Chemical Society. Last July the Demonstrator in the Laboratory, Dr. H. A. D. Jowett, was granted the degree of Doctor of Science in the University of London, mainly on the results of the work he has conducted in the Research Laboratory.

A second volume of papers from the Research Laboratory, edited by the Director, has been printed and issued to Members of the Council, and other officers of the Society, and also to the Honorary, and to the Corresponding Members, as well as to other persons interested in the subject.

The Committee suggests that copies should be supplied to Members of the Society on application to the Secretary.

The PRESIDENT having moved that the report of the Research Committee be received and entered on the minutes,

Dr. SYMES said that having perused this report, he was confirmed in the view which he had held for some time—which was not perhaps quite orthodox—that the research work as hitherto conducted had contributed very little to the advantage of pharmacy, although it had cost the Society large sums of money. Certainly the Royal Society and the Chemical Society had contributed to the expenses, but taking it all through, the work accomplished was not at all adequate to the amount of money expended by the Society, and whilst the members of the Society had contributed the great bulk of the expenditure, they had not received anything like an equivalent. He could not help thinking that the thousands of pounds spent by the Society in research work contrasted very strongly with the small sums spent by the Pharmaceutical Conference, whilst the benefit which had accrued to the calling from the work of the Conference was far in excess of that arising from the work in the Research Laboratory. He did not wish to reflect unduly on the past, but he was obliged to say this much before expressing his hope that there might be better results in the future, to which he looked forward with some confidence. He trusted that now the research work would be done in closer touch with the ordinary work of pharmacy and with increased supervision. They had the advantage of having Mr. Carteighe as Visitor, and he would no doubt in the most genial and graceful manner suggest from time to time subjects suitable for investigation, and likely to produce results which would be of advantage to all. He hoped, therefore, that the Research Laboratory was not dead, but that it would enter, as had been said of the School, on a new volume which would be well worthy of perusal, and of more benefit to the members at large than those which had gone before.

The PRESIDENT said the agenda paper contained a note in connection with the Research Committe as to the nomination of the Salters' Research Fellow. On October 27 the Committee met, and several very good applications for this fellowship were considered, but he was not in a position to announce who had been appointed. On the recommendation of the Professor of Chemistry, the Committee nominated a certain gentleman, and his name had been sent in to the Salters' Company, but the Court did not meet until the following day, and it would not therefore be right to mention the name until it had been formally approved. He need not refer at any length to the remarks of Dr. Symes. It was to a large extent a matter of opinion, and that was perhaps not the time to go into detail and attempt to prove one's case, one way or

the other. He was quite sure Dr. Symes's remarks would be considered, and he hoped the work done in the Research Laboratory during the next twelve months would command general approval, including that of Dr. Symes.

The resolution was then put and carried unanimously.

General Purposes Committee.

The report of this Committee, other than the legal business, included a recommendation for a verbal amendment in the regulation of the Board of Examiners; also that the persons whose names appeared in the lists presented (see Inset) be appointed local secretaries and assistant local secretaries for the ensuing year.

A communication from Tasmania with reference to the acceptance of a certain certificate in lieu of the Society's First examination had been considered, and the Secretary was instructed to send a reply, stating that the regulations affecting the First examination were occupying the attention of the Committee, and the letter from Tasmania, with others, would be duly considered.

The President, in moving the adoption of this portion of the report, confessed to being disappointed that from so many centres no nominations as local secretaries had been received. In England there were 46 places which had failed to send nomination papers, in Wales 7, and in Scotland 16. He did not suppose tha tthe failure in all the places was due to apathy; no doubt it arose from the fact that some gentleman had held the office for a long period entirely to the satisfaction of his colleagues in the district, and consequently they had not voted for him, thinking his re-election was a foregone conclusion. He would ask all those who read his remarks, when the next opportunity offered, to take some trouble to find the best man in the district, and send a vote in his favour. He then reported that the following gentlemen had retired from the secretaryship:—

Mr. W. R Blain, of Bolton,
Mr. Geo. Rimmington, of Bradford,
Mr. Jno. Stroud, of Bristol.

He was sure the Council would wish to convey their thanks to these gentlemen for their services in the past. There were many opportunities of doing good work for the Society in various ways, and he hoped that during the next twelve months there would be increased energy on the part of those who represented them. The subject to which he had referred was so important that it was quite possible it would he a question for the serious consideration of the Council on a future occasion whether it would not be wise to delete from the list such centres as did not send nominations, if the Council received no obvious proof that there was any serious interest whatever taken in the affairs of the Society.

Mr. Cross, as a local secretary, wished to thank the President for his kind appreciation of the services of the secretaries. With regard to the matter referred to by the President, he thought it was of the supremest importance to the well-being of the Society. The appointment of local secretaries throughout the country was one of the grand schemes which Jacob Bell had in view. With regard to the forty-six places mentioned as having sent no nomination, he hoped a searching investigation might take place to ascertain the reason of the neglect. They had impressed upon their country brethren the importance of carefully choosing the very best man they could for the office. To some extent they had congratulated themselves that an improvement had taken place during the last few years. On the passing of the Local Government Act the centres had been somewhat enlarged, and the electoral divisions were chosen, some of which divisions comprised districts which from an urban point of view were rather unimportant, and it might be that chemists were not so readily in touch in those districts as they would be under the old conditions. In some of these districts the Society seemed dead. This was not as it should be, and that every member of the Council would feel it his duty at this present juncture to alter that state of affairs. In these districts the Benevolent Fund and subscriptions to the Orphan Fund were things unknown. Under these circumstances he should feel it his duty on a future occasion to put a notice on the paper drawing attention to the subject, and asking that an investigation should take place.

Mr. Atkins said no one had more right to speak on this subject than Mr. Cross, who had been a most devoted local secretary, and he should reserve whatever remarks he might have to make when he raised the question. With regard to one of the local secretaries who were retiring, viz, Mr. Stroud, of Bristol, he thought they ought to thank him for the long and able services which he had rendered to the Society. He happened to know how disinterestedly and efficiently for a great many years Mr. Stroud had performed his duties, and he was sure they would all feel indebted to him.

Mr. Carteighe supported Mr. Atkins' remarks. He knew the retiring secretaries personally, and that it was only right that they should be referred to in the way suggested by Mr. Atkins.

First Examination.

The President placed on the table a list of centres at which written examinations are to be held during the ensuing year, and it was resolved that the appointment of superintendents of such examinations be offered to the local secretaries in those centres.

The following list of centres at which examinations had been held during the past three years, with the number of candidates at each centre, was ordered to be entered on the minutes.

List of Centres and Table of Attendances of Candidates at each Centre.

CENTRES.	1894. Jan., Apr., July, Oct.	1895. Jan., Apr., July, Oct.	1896. Jan., Apr., July, Oct.	Total number of attendances at each centre at 12 examinations.
ENGLAND AND WALES.				
Birmingham	90	67	85	242
Brighton	16	18	22	56
Bristol	38	26	29	93
Cambridge	18	13	27	58
Canterbury	17	6	10	33
Cardiff	36	40	32	108
Carlisle	54	40	41	135
Carmarthen	36	40	50	126
Carnarvon	26	15	20	61
Cheltenham	12	11	10	33
Darlington	28	26	18	72
Exeter	19	15	22	56
Hull	22	25	36	83
Lancaster	13	24	26	63
Leeds	61	69	84	214
Lincoln	19	17	20	56
Liverpool	58	76	72	206
London	169	154	121	444
Manchester	131	125	138	394
Newcastle	47	57	72	176
Northampton	4	14	13	31
Norwich	34	20	18	72
Nottingham	57	52	47	156
Oxford	9	20	17	46
Penzance	14	13	12	39
Peterborough	14	27	9	50
Plymouth	24	11	14	49
Sheffield	28	24	16	68
Shrewsbury	18	22	25	65
Southampton	44	39	31	114
York	24	29	18	71
SCOTLAND.				
Aberdeen	60	53	69	182
Dundee	43	31	42	116
Edinburgh	111	106	136	353
Glasgow	92	73	106	271
Inverness	28	16	18	62

Total number of attendances at 3 examinations.

Douglas, I. of Man	6
Guernsey	5
Jersey	3
Kirkwall	6

The Council went into committee, as usual, to consider the legal portion of the report.

On resuming, the report and recommendations were adopted, and special resolutions passed authorising the Registrar to take proceedings against the persons named.

"FIRST" EXAMINATION RESULTS.

A meeting of the Board of Examiners for England and Wales was held on Tuesday, November 3.

Certificates by approved examining bodies were received from the undermentioned in lieu of the Society's examination:—

Coley, Ernest James William; Stroud.
Hamer, Enoch Thomas; Southport.
McCarthy, William A.; London.
Neathercoat, Ernest T.; Ely.
Renouf, Lucy; Jersey.
Renouf, Nora; Jersey.
Steward, Charles A.; Worcester.
Taylor, Samuel S.; Brighouse.
Woodhouse, Wildish M.; Ludlow.

The report of the College of Preceptors on the examination held on October 13 was received. 330 candidates had presented themselves for examination, of whom 168 had failed.

The following 162 passed, and the Registrar was authorised to place their names upon the Register of Apprentices and Students:—

Abel, Edward Thomas; Minera.
Allen, Benjamin George; Oxford.
Anderson, David; Penicuick.
Arnott, William Patrick; Kirkcaldy.
Bannerman, George; Inverness.
Billings, Marian Janet; Cheltenham.
Boultbee, Charles Edward; Sutton.
Bowerbank, Fred Thompson; Penrith.
Brown, Charles Stewart; St Andrews.
Bryce, Adam Whiteford; Lanark.
Buckley, George Herbert; Chester.
Burn, Bertram William; Morpeth.
Burn, Mordey; Manchester.
Burr, William Walter; Southborough.
Buswell, Thomas Henry; Lutterworth.
Castle, William John; Birkenhead.
Challens, Arthur Raymond; Yardley.
Clark, Charles; Kirkcaldy.
Clark, John Barton; London.
Clayton, James; Gt. Harwood.
Cock, Alfred Percy; Appledore.
Cook, Charles Henry; Horsell.
Cook, William; Motherwell.
Cottle, Charles James; Newferry.
Cowan, Austin William; Meifod.
Crofts, Albert Wood; Hinckley.
Cross, Henry Ernest; Plymouth.
Cross, John William; Bedford.
Culverhouse, Albert H.; Colchester.
Cumber, Joseph John; Guernsey.
Davies, Hugh; Wrexham.
Davies, William; Birkenhead.
Dent, John Stephenson; Hornsea.
Draper, Eliza Frances; London.
Drynan, John Forgie; Carluke.
Egerton, William; Claughton.
Evans, John Owen; Chapeltown.
Ewbank, John; Liverpool.
Fell, Harry Percival; Woodley.
Fenton, Samuel Gray; London.
Fielden, James; Rochdale.
Francis, Alan; London.
Francis, Reginald J.; Leamington Spa.
Gale, William Edward; Ilkley.
Garvie, James; Boness.
Geary, James Herbert; Croydon.
Goodyer, William; Weston
Graham, Robert; Gateshead-on-Tyne.
Grandison, David C.; Dunfermline.
Gray, Alexander; London.
Grennan, Edward Shedrick; Lincoln.
Grimwade, Edward E.; Colchester.
Hadfield, Sidney Herbert; Preston.
Hamnett, John William; Blackpool.
Hancock, Herbert Arthur; Cambridge.
Harris, Frederick Ernest; Cambridge.
Hay, James; Banff.
Heywood, Fred; Heywood.
High, Henry; Bishop Auckland.
Hindley, Frank Lawton; Forest Hill.
Hobson, Charles Harry; Shildon.
Hodgson, John William; Lancaster.
Holmes, Ralph Michell; Tiverton.
Holt, John Bowler; Manchester.
Horniblow, Kate Nellie; Charlbury.
Howat, John; Thornhill.
Hume, Robert Marshall; Duns.
Hume, Thomas Andrew; Glasgow.
Irvine, Lottie; Muthill.
Johnstone, Richard; Townhead.
Jolly, Charles Stewart; Montrose.
Jones, Benjamin Saunders; Crewe.
Jones, Charles; Bury.
Kent, Frank Stephen; Hastings.
Kerr, James William L.; Greenock.
Kerr, Malcolm; Saltcoats.
Leigh, William Hamer; Bolton.
Lewis, Ernest Samuel; Bishop's Castle.
Lewis, Robert Alun; Llangollen.
Lord, Nettie; Forest Hill.
McHardy, Alexander; Aberdeen.
Mackenzie, Alister Thomas; Alness.
McLaren, Alexander K.; Motherwell.
McLellan, John Young; Kirkintilloch.
McMeekin, Thomas; Airdrie.
Makepeace, Harold Edward; London.
Manfull, Claud; Nottingham.
Marr, Archibald; Auchmill.
Martin, Frederick John; Belfast.
Maxwell, William; Kelso.
Mendry, Murdo; Forres.
Michie, James A.; Aberdeen.
Mitchell, Godfrey T.; Accrington.
Morrison, David Rae; Dalbeattie.
Morton, Gavin; Edinburgh.
Moss, Edgar; Burslem.
Murray, David Moore; Heworth.
Niven, Andrew Mackay; Aberdeen.
Noble, Sam. Atkinson; Huddersfield.
North, Donald; Leeds.
Oldham, John Joseph; Preston.
Paisley, Scott; Langholm.
Pallot, Albert Joseph; Cardiff.
Paterson, Andrew H.; Musselburgh.
Perkins, Reginald William; Stafford.
Peters, William Harold; Breaston.
Phillips, George W.; Cemmaes.
Platt, Edward Norman; Shaw.
Prevell, William; Newcastle-on-Tyne.
Prosser, David Arthur; Sheerness.
Pugh, John Charles; Aberystwith.
Ramsay, William Tyfe Craik; Forfar.
Rayner, Edith; Holloway.
Reeves, Horace; Cheltenham.
Reid, Alexander Smith; South Shields
Reynolds, Jesse M. T.; Barnsley.
Richards, David T.; St. Clears.
Richards, John Brooker; Macclesfield
Robinson, Hilda; Birmingham.
Ross, John Pitkethly; Montrose.
Sambrook, John Thomas; Monmouth.
Samways, William Edgar; Gillingham
Saunders, Alfred; Dumbarton.
Savage, Francis Comer; Birmingham.
Sawyer, Albert Ernest; Wrentham.
Shand, Adam Leslie Walker; Aberdeen
Siggers, Clement; Colchester.
Simon, William Leslie; Chester.
Smith, James; Carlisle.
Smith, Robert Frederick; Hartlepool.
Smith, Roderick; Liverpool.
Spence, Robert Anderson; Dumfries.
Steel, Thomas Wardrop; Galston.
Stewart, George T.; New Scone.
Stewart, James Craig; Edinburgh.
Stoddart, Marcus; Selkirk.
Stork, Percy Beal; Hornsea.
Sutherland, James Durie; Arbroath.
Swanson, John; Thurso.
Swinn, Robert Fred; Manchester.
Thomas, William Isaac; Abergele.
Thomson, Alexander; Aberfeldy.
Thornley, Nathan; Radcliffe.
Tozer, Ernest Alfred; Boscombe.
Tremlett, Percival G.; Portsmouth.
Trott, Edward Henry; Bolton.
Turner, John William; Wanstead.
Venables, Edith Wood; London.
Vincent, Mary; London.
Walmsley, James Edgar; Halifax.
Weddle, William Gardner; Liverpool.
Weller, Cecil; High Wycombe.
Welsh, Thomas; Edinburgh.
Welton, Charles Henry; Coventry.
White, Thomas K.; Glasgow.
Wilbourne, Ernest Wardman; Hucknall Huthwaite.
Williams, David Thomas; Chester.
Williams, William Robert; Cardiff.
Willis, Alfred James; New Brompton.
Wilson, Frank; Sunderland.
Wise, Guy William; Watford.
Withers, Arnold Bertram; Walsall.

The questions set at this examination were published in the *Pharmaceutical Journal* for October 17, p. 344.

The following is a list of the centres at which the examination was held, showing the number of candidates at each centre, and the result.

	Candidates.				Candidates.		
	Examined.	Passed.	Failed.		Examined.	Passed.	Failed.
Aberdeen	15	7	8	Lancaster	5	3	2
Birmingham	18	7	11	Leeds	15	6	9
Brighton	3	2	1	Lincoln	4	1	3
Bristol	3	0	3	Liverpool	25	11	14
Cambridge	7	4	3	London	33	20	13
Canterbury	1	0	1	Manchester	29	17	12
Cardiff	8	3	5	Newcastle-on-T.	10	5	5
Carlisle	11	6	5	Northampton	1	1	0
Carmarthen	9	1	8	Norwich	3	1	2
Carnarvon	3	1	2	Nottingham	10	4	6
Cheltenham	3	1	2	Oxford	4	2	2
Darlington	5	3	2	Penzance	1	0	1
Dundee	9	5	4	Peterborough	3	1	2
Edinburgh	27	16	11	Plymouth	1	1	0
Exeter	7	3	4	Sheffield	3	0	3
Glasgow	25	13	12	Shrewsbury	8	7	1
Hull	6	2	4	Southampton	7	3	4
Inverness	7	4	3	York	1	1	0

DETERMINATION OF MERCURY BY THE KI PROCESS.

BY W. MILES BRAMLEY.

In the determination of the strength of a mercuric chloride solution by the volumetric process with iodide of potassium, it was found that the order of procedure was important.

When 1 C.c. of the $HgCl_2$ solution was placed in a flask and the KI solution added to it from a burette, only 1·3 C.c. was required to produce a permanent mercuric iodide precipitate; whilst when 1 C.c. of the same mercuric solution was diluted with water to 100 C.c. and placed in a burette, it was found that by putting 5 C.c. of the original KI solution in a flask and adding thereto the diluted mercuric chloride solution, a permanent HgI_2 precipitate was not obtained until 10·4 C.c. had been delivered from the burette.

As in the text-book which I have consulted there is no mention made of the order of mixing, I thought it advisable to place this on record. It also leads me to conclude that mercuric iodide is insoluble in an excess of $HgCl_2$ solution quite as much as HgI_2 is soluble in excess of solution of KI.

NOTES AND FORMULÆ.

Detection of Resin Oil in Fatty Oils.

The fact that the salts of resin acids are not precipitated by "salting out" with brine solution has enabled Comette to detect resin oil when fraudulently mixed with vegetable oils. Ten grammes of the suspected oil are saponified with caustic soda; the soap obtained is dissolved in warm water, cooled, and a saturated solution of salt added; the salts of the fatty acids are thrown out, but the resinates remain in solution. The liquid is filtered and acidulated with sulphuric acid, when the resin acids are precipitated in small globules, giving a milky liquid, or floating on the top in small discs. These may be collected and weighed.—*Répertoire* [3], vii., 300, after *Annal. de Pharm. de Louv.*

Saponin Emulsions.

According to Schazki (*Rev. Pharm. des Flandres*), saponin is preferable to gums, alkali, yolk of egg, or other substances used for pharmaceutical emulsions. The following are the formula recommended:—*Castor oil emulsion*: Castor oil, 30 grammes; saponin, 15 centigrammes; water, 150 grammes. *Cod-liver oil emulsion*: Cod-liver oil, 100 grammes; saponin, 20 centigrammes; water, 100 grammes; oil of peppermint, 2 drops. *Copaiba emulsion*: Balsam of copaiba, 5 grammes; saponin, 12 centigrammes; water, 95 grammes. *Creosote emulsion*: Creosote, 1·25 gramme; oil of sweet almonds, 10 grammes; saponin, 6 centigrammes; water, 100 grammes. *Iodoform emulsion*: Iodoform, 2 grammes; oil of sweet almonds, 8 grammes; saponin, 18 centigrammes; water, 100 grammes. *Chloroform emulsion*: Chloroform, 50 centigrammes; oil of sweet almonds, 15 grammes; saponin, 12 centigrammes; water, 100 grammes. *Camphor emulsion*: Camphor, 80 centigrammes; oil of sweet almonds, 15 grammes; saponin, 12 centigrammes; water, 100 grammes. *Santonin emulsion*: Santonin, *q. v.*; castor oil, 15 centigrammes; saponin, 12 centigrammes; water, 100 grammes. Employed thus, in this proportion, saponin is absolutely harmless.—*Bullet. Comm.*, xxiv., 272.

Preparation of Ionone.

According to Duyk (*Journ. de Pharm. d'Anvers*, lii., 274), ionone may be prepared as follows:—Into a stoppered flask are introduced 65 C.c. of acetone, 50 C.c. of citral, and a litre of saturated baryta water. The mixture is shaken together for several days, then extracted with ether. The ethereal residue, after evaporating the solvent, is then distilled under reduced pressure (12 M.m), the portion passing over between 130° to 155° being reserved; this is then treated with a current of steam to remove impurities, and again fractionated under reduced pressure, the part distilling 138° to 155° being kept. This is heated on the water bath with 100 parts of water, 2½ parts of sulphuric acid, and 100 parts of glycerin. After cooling, the liquid is again extracted with ether, the ethereal liquid evaporated, the residue distilled under 12 M.m. pressure, and what comes over between 125° to 135° is ionone.

Phosphate of Bismuth.

It is suggested by Kauffeisen that phosphate of bismuth should be substituted for the subnitrate, being more stable and definite in composition and at the same time easily prepared in the pharmacy. Dr. Tédenat, of Lyons, finds that it is quite as efficacious in its therapeutic properties as the subnitrate. The frequency with which samples of bismuth subnitrate develop a markedly acid reaction, and also the varying density and structure of the powder, renders it desirable that a more stable, unvariable salt should be employed, provided it be equal in efficacy.—*Répert.* [3], vii., 303, after *Bullet. de la Soc. des Pharm. de Côte d'Or.*

New Method of Drying Vanilla.

According to Dolabaratz, vanilla may be advantageously dried by enclosing the pods in hermetically sealed vessels with chloride of calcium, about equal weights of pods and desiccating salt being employed. The chloride is not lost, for by simply re-heating it can be used again. By this method 2 981 kilos. of raw vanilla will produce 1 kilo. of the prepared article. The vanilla so prepared loses much less of its vanillin than when dried by the ordinary process in which it is exposed in the open air for several weeks.—*Journ. Soc. Chem. Ind.*, xv., 613, after *Independ. Creole.*

PARLIAMENTARY NOTES.

Persian Olives.—An interesting report has just been issued from the Foreign Office, dealing with the cultivation of olives in the Ghilan districts of Northern Persia. It is estimated that there are now something like 130,000 trees (probably *Olea ferruginea*) in the district watered by the Sefid Rood. The altitude of the district varies from 500 to 2000 feet above sea level, and the trees are placed irregularly, without any attempt to preserve adequate room for individual growth. The only attention accorded them in the shape of cultivation seems to be an occasional dressing of manure and regular irrigation once a week.

The Yield of Fruit does not appear to be prejudicially affected either by the want of attention or the range of climate consequent upon the varying altitude of the groves. The trees are said to be full grown when they have attained from ten to twelve years' growth, and an adult tree will, in good years, give about 85 lbs. avoirdupois of olives. The estimated produce of the district might therefore be roughly put at 8,000,000 lbs. for a good average year.

The Method of Extracting the oil is quite in keeping with the primitive ideas of cultivation in the district. The olives are collected in the late autumn by the simple expedient of shaking the trees, they are then boiled for an hour, dried in the sun, and pressed in troughs under the feet of native labourers. By this means a kind of olive paste is produced, which, after being placed in a suitable earthenware jar and again heated, is finally packed in bags and pressed. The oil thus resulting is said to keep for years without deterioration if stored in earthen jars.

Most of the Oil Extracted has hitherto been locally manufactured into soap, which ought certainly to be of excellent quality, seeing that the materials used are lime, 4 parts; alkali, 10 parts; oil, 12 parts; and salt 1 part. A Greek firm, however, has now secured a concession to purchase and work all the olives in Northern Persia, and it is not contemplated that soap-making will be a large item in their commercial programme, but that their attention will be chiefly, if not solely, directed to the production of high-class table oil for export to Russia and elsewhere. With the machinery now being erected at Viaieh in the centre of the olive district, the enterprising Greeks ought to get more oil per tree than the natives have managed to extract with their picturesque but antiquated jars, bags, and foot-pressings.

Bavarian Chemical Trade.—From the latest Consular Report on the trade of Bavaria for 1894 and 1895, one gathers that the period was characterised by a general depression. Petroleum, soap, and chemical manures were recorded as exhibiting most unsatisfactory downward tendencies. On the other hand, there appears to have been some ground for Bavarian rejoicing in the fact that business in aniline dyes, potash, and glue showed considerable activity, chiefly on account of increased exports to England. The report reveals the existence of a good deal of grumbling in the Palatinate about unfair competition (*unlauter Wettbewerb*) and a general cry for increased duties on foreign goods.

Grants in Aid of Science and Art.—Departmental Committees of inquiry are apparently in high fashion just now. The latest is a Committee appointed by the Lord President of the Council to consider the mode of distributing grants made to science and art schools, and to report if, and what, alterations are necessary therein. Sir John Gorst, as Vice-President of the Council, will preside over the Departmental Committee, which will consist of three members of the late Commission on Secondary Education (Mrs. Sidgwick, Sir H. E. Roscoe, and Professor Jebb, M.P.), with Sir J. F. D. Donnelly, K.C.B, and Captain W. de W. Abney, C.B, to represent the Science and Art Department, Mr. G. L. Ryder, C.B., the Treasury, and Mr. Armstrong, the Dublin National Gallery. Captain Abney will act as the Secretary to the Committee.

PHARMACEUTICAL JOURNAL.

A Weekly Record of Pharmacy and Allied Sciences.

ESTABLISHED 1841.

Circulating in the United Kingdom, France, Germany, Austria, Italy, Russia, Switzerland, Canada, the United States, South America, India, Australasia, South Africa, etc.

Editorial Office: 17, BLOOMSBURY SQUARE, W.C.

Publishing and Advertising Office: 5, SERLE STREET, W.C.

LONDON: SATURDAY, NOVEMBER 7, 1896.

THE COUNCIL MEETING.

After the minutes of the preceding meeting had been read and confirmed last Wednesday, the President mentioned that he had received from Mrs. Betty a letter thanking the Council for the expression of sympathy with herself and family on the death of Mr. Betty. He also referred to the loss the Society has sustained during the past month by the death of two distinguished corresponding members—Baron Ferdinand von Müller and Dr. Henry Trimen, and also of Dr. Langdon Down, an honorary member since 1866, one of the earlier students in the Society's School and first prizeman in organic chemistry in 1847. After speaking of the deep interest and sympathy manifested by Dr. Langdon Down in the Pharmaceutical Society and its work, the President was requested by the Council to write to Mrs. Langdon Down, expressing to her and the members of her family its sense of the loss sustained by the Society.

Mr. Atkins spoke of the intense loyalty Dr. Langdon Down has always shown for the Society, and Mr. Carteighe recalled the fact that Dr. Langdon Down was elected an honorary member, on the motion of Mr. Orridge, as reflecting credit upon the Society's School, adding also, from his own experience, that he had always been ready to assist any benevolent or educational undertaking connected with the Society.

The Finance Committee report had no special feature, and was adopted without discussion. The President mentioning that the sum of £450 had been received for the Benevolent Fund after deduction of legacy duty on the £500 left by the late Mr. Dudgeon, of Nottingham—that the Brighton Junior Association has sent a contribution which he regretted was not noticed at the time, and that three guineas has been sent by the Edinburgh District Chemists' Trade Association, partly for the Orphan Fund. In reference to these donations the President expressed gratification at finding that throughout the country interest taken in the Benevolent Fund.

On the recommendation of the Benevolent Fund Committee, nine grants, amounting in the aggregate to one hundred and four pounds, were ordered to be paid. The Vice-President spoke of the painful circumstances connected with some of the cases in which grants had been recommended, urging that they should be inducements to a more general response to the appeals of the Committee. He showed that this is very necessary because of the present condition of the Fund, and from the demands that will be made upon it before the end of the year. An increase in the amount of small annual subscriptions would do a great amount of good, and with money given in that way there is the great additional advantage of not being subject to deduction for legacy duty.

The report of the Library, etc., Committee gave the usual information respecting attendances, donations, and the purchase of books, etc.

In connection with the School, the President stated that fifty-six students have entered, exclusive of the Bell and Redwood scholars, and that Mr. Carteighe has been appointed Visitor to the School, in order to establish that close contact between the Council and the inner working details of the School, which is held to be desirable. No one, he thought, could undertake this duty with more benefit to the Council than Mr. Carteighe. That view of the matter was endorsed by the Treasurer and Mr. Atkins, both of whom insisted upon the importance of the Council being kept cognisant of every detail of the educational establishment. The general tenour of the report on the School was held by the President and other speakers on the subject to be satisfactory, and affording good reason to hope that the School would become a pattern for similar institutions, and no longer a source of regret that there was a weak point in their establishment.

After the reading of the report on examinations, a resolution was passed that the Boards in London and Edinburgh should meet to conduct the oral parts in January, April, July, and October during 1897. Mr. Martindale called attention to the large proportion of failures, showing that more than half of the candidates present themselves for examination without being prepared, and Mr. Carteighe agreed with him in thinking it was a disgrace to be rejected.

The report of the Research Committee, which had been placed in the hands of members of Council beforehand, will be found at p. 403. It shows that during the past Session eleven workers have been engaged in the laboratory partly in preliminary operations, and partly in conducting special inquiries under the supervision of the Director. Attention has been largely directed to the definition of the alkaloids contained in various species of aconite, and substantial progress has been made. Material for investigation has been provided by the Government of India at the instance of the scientific department of the Imperial Institute, and besides the examination of varieties of podophyllum and Indian opium other inquiries are in progress. In addition to the grant of £150 by the Pharmaceutical Society, grants have been made by the Royal Society and the Chemical Society towards defraying the working expenses. A second volume of papers has been printed and issued to members of the Council, and copies can be obtained by members of the Society on application to the Secretary. Before being received on the motion of the President, Dr. Symes remarked that perusal of the report had confirmed his opinion that hitherto the Research Laboratory had been of little advantage to pharmacy, though it had cost the Society much money. Contrasting the expenditure with the small sums spent by the Pharmaceutical Conference, he thought the benefit derived from the work of the Conference was far in excess of that resulting from the work of the Research Laboratory. He trusted, however, that research

work would in future be conducted with more regard for the requirements of pharmacy, and that with the advantage of being under the supervision of Mr. CARTEIGHE as Visitor, the laboratory would, like the School, prove of increased value to the members.

The PRESIDENT referred to the nomination of the Salters Research Fellow as having been placed on the agenda, but stated that he was not in a position to state who had been appointed, as the Court of the Salters' Company would not meet until the 5th inst. In reference to the remarks of Dr. SYMES, he would not enter into a discussion of matters of opinion, but hoped the work done in the Research Laboratory during the next twelve months would command the admiration of all, including Dr. SYMES.

The report of the General Purposes Committee recommended an amendment in the regulations of the Board of Examiners, which was agreed to. A further recommendation related to the appointment of the persons named in the lists given in this week's Journal as local secretaries and assistant local secretaries, which was also adopted after some discussion.

The PRESIDENT expressed disappointment that no nominations for the appointment of local secretaries have been received from sixty-nine places in the Kingdom. He suggested that the failure in that respect was not altogether due to apathy, but might be indicative of satisfaction with the occupation of the office being continued as before. But he wished that in future more trouble might be taken in ascertaining who was the best man in the district and sending a vote in his favour. After reporting that three local secretaries (see p. 404) had retired from the office, and adding that the Council desired to thank them as well as all other local secretaries for their past services, the PRESIDENT again commented upon the importance of the Society being well represented, and he suggested that it might be desirable on a future occasion to delete such centres as do not send a nomination for the appointment and give obvious proof that serious interest was taken in the affairs of the Society.

Mr. CROSS, speaking as a local secretary, thanked the PRESIDENT for his appreciation of services rendered in that capacity and, regarding the office as one of the most important arrangements contemplated by JACOB BELL, he suggested that a close investigation should be made to ascertain the reasons for neglecting to send in nominations. Various circumstances were mentioned as possibly accounting for the omission, but in any case he thought the matter of such importance that, on a future occasion, he should ask for an investigation to be made.

Mr. ATKINS, while reserving his remarks on the subject for the present, wished that Mr. STROUD, of Bristol, should be thanked for his long and able services, as he happened to know how disinterestedly they had been performed for many years. Mr. CARTEIGHE supported these remards by saying that he knew the retiring local secretaries personally, and that it was right they should be referred to in the way suggested.

A list of places where written examinations are to be held during the ensuing year was presented, and it was resolved that the office of superintendent of such examinations should be offered to the respective local secretaries.

The Council then considered in committee the legal portion of the report, and on resuming, the recommendations were adopted, special resolutions being passed authorising the Registrar to take proceedings against the persons named.

ANNOTATIONS.

THE FIRST EVENING MEETING of the present Session will be held at 17, Bloomsbury Square, London, on Tuesday next, November 10, at eight o'clock, and a lecture will then be delivered by Professor J. Norman Collie, Ph.D., F.R.S., on the "Discovery of Argon and Helium." Evening meetings are not always so well attended as they might be, but there are two good reasons why this occasion should be marked by a record attendance. In the first place the chair will be taken by Mr. Walter Hills, who will appear for the first time as President of the Society at an evening meeting, and in addition the newly-appointed Professor of Chemistry will introduce himself to the members by a discourse on a most fascinating topic. In view of enquiries that have been made, it may be stated that subscribers to the Society are at liberty to bring friends to the meeting.

THE 'YEAR-BOOK OF PHARMACY' grows small by degrees and beautifully less. Last year it had shrunk from 567 pages to 455, and now the 1896 volume comes before us with only 414 pages. Well! one must cut one's coat according to the amount of cloth available, and if there be an insufficiency of members of the B.P.C. to provide the necessary funds, those who remain faithful must needs content themselves with a small 'Year-Book,' unless they submit to pay an increased subscription. It will be remembered that, at the Liverpool meeting, Mr. Carteighe stated that nearly the whole of the subscriptions were expended in the production of the book, and he also suggested that the question of the existence of the Conference in its present form really depends on whether the members care about the 'Year-Book' or not. If this suggestion be justified by facts the outlook is a poor one for the future of the perambulating pharmacists, regarded as a separate body. It is worth considering, however, whether the suppression of the 'Year-Book,' which no one can reasonably allege to be a necessity, and reduction of the subscription to half-a-crown, might not result in a much larger association being formed. The social features of the annual meeting need not in that case suffer any eclipse because no official "proceedings" would be published, nor need the reading and discussion of papers be discouraged because what was said would not be reproduced in book form.

ROYAL INSTITUTION.—At the general monthly meeting of the members of the Royal Institution, held on November 2, it was announced that the Christmas lectures, specially adapted for children, will this year be given by Professor Silvanus P. Thompson, F.R.S, his subject being "Visible and Invisible Light"; and it was reported that the managers had elected Professor Augustus D. Waller, M.D., F.R.S., Fullerian Professor of Physiology for three years, the appointment to date from January 13, 1897, and also that the managers had appointed Dr. Alexander Scott, M.A., D.Sc., to be Superintendent of the Davy-Faraday Research Laboratory of the Royal Institution, the Directors, already appointed by the managers, being Lord Rayleigh and Professor Dewar. After the meeting the members inspected the new rooms which have been lately added to the library of the Royal Institution, through the munificence of Dr. Ludwig Mond, F.R.S., which rooms will provide increased accommodation for the members on the occasion of the Friday evening meetings.

CULTIVATION OF IPECACUANHA IN THE STRAITS SETTLEMENTS.—With reference to the note which appeared in the *Pharmaceutical Journal* (*ante*, p. 349) on the cultivation of ipecacuanha in India,

it is desirable to place on record the fact that this drug has been successfully grown in other parts of the East. In Mr. Cantley's Report on the Forest Department of the Straits Settlements for 1886 (quoted in the *Kew Bulletin*, 1888, pp. 127-128) it is stated "that the ipecacuanha seems to grow in the Straits with all the luxuriance of its native country. I visited," says Mr. Cantley, "a plantation in Johore and saw thousands of plants in excellent health. They were protected from the sun by palm leaves laid side by side on artificial supports about six feet high; hedges of the same material were put down a few yards apart." It is possible that this plantation was the source of the ipecacuanha which found its way into the London market at the latter end of 1887. This was, according to the *Kew Bulletin*, the first commercial sample of the drug produced in the Old World. A report upon its examination was given by Mr. Francis Ransom in the *Pharmaceutical Journal*, 1887, p. 400. It was stated that this cultivated ipecacuanha was "quite equal to the average Brazilian root." Since that time very little has been heard of this interesting cultivation. We find, however, that it is still in existence, for Mr. H. N. Ridley, F.L.S., Director of the Gardens and Forest Department in the Straits Settlements, makes the following mention of it in his *Agricultural Bulletin* (No. 4, 1895):—"The ipecacuanha of the Pengerang Estate appears to maintain its high reputation if we may judge by the home market reports, where when good quality Carthagena was at 4*s.* 6*d.* per lb. and fair stout Brazilian at 5*s.* 9*d.*, the owner refused 6*s* per lb. for the Johore root."

Beeswax is not a Drug, according to Justices Grantham and Wright, if sold by a grocer who does not sell it as such (see p. 413). This seems reasonable, though the average man who finds that the "beeswax" he has purchased contains fifty per cent. of paraffin may wish that other things than foods and drugs were legally protected against sophistication. For adulterated beeswax is bad beeswax, and will not in critical cases serve the desired purpose. Its sale is therefore decidedly to the prejudice of the purchaser. Mr. Justice Grantham said there was no suggestion of any fraud in the case, but it remains an open question whether there ought not to have been such a suggestion. Probably, however, the reason fraud was not alleged was because of the difficulty of proving it. But, seriously, is it not somewhat of a farce to keep up the fiction that, when a tradesman purchases under a well-defined name a very low-priced article which he knows nothing about, and never thinks of having examined, he is to be held free from reflection because he sells it in the same condition as he bought it?

Chemists and Druggists secure a useful and, on the whole, well-deserved advertisement from the decision in the above case. It is implied in the remarks of both judges that if you require any article to be used medicinally it ought to be purchased of a chemist and druggist. Similarly, if an unsophisticated article is wanted, purchasers are inferentially advised to buy of the same individual. This is very complimentary, very nice, and at the same time fully justified by facts. Without going so far as to assert that registered chemists never sell articles below the mark, it is safe to say that the vast majority deal honestly with their customers, and, more than that, give them better value than can be procured elsewhere, inasmuch that they usually know something about what they sell.

The Legal Status of the Rebate System is at present before the Supreme Court of New York, and so far the results can hardly be regarded as encouraging by supporters of systems that aim at the prevention of cutting prices of proprietary articles. The plaintiff firm asked for an injunction to restrain the National Wholesale Druggists' Association, which, it was alleged, had combined to prevent the firm from obtaining proprietary medicines, thereby crippling its business as a wholesale drug house. The decision of the Court, as published in the *Alumni Report*, is that each manufacturer has a legal right (1) to agree with his customers that his goods shall not be sold under a certain price, and (2) to refuse to sell to any customer, for any reason whatever, any goods manufactured by him; whilst (3) the Association has the right to collect and circulate information about the way a firm does its business, and about any breaches by other wholesalers of their contracts with manufacturers.

As Regards Combination to prevent cutters procuring stock, the Court decided, on the application for an injunction, that it is unlawful for a manufacturer to become a party to a combination which will prevent any of his customers from obtaining other goods of other manufacturers because those customers violate their agreement with him in respect to a cutting of prices, and further, that it is illegal to make such violation a cause of a general exclusion of such customers from the power to purchase any kind of proprietary medicines from any of the other members of the Association. "It is not lawful to form a combination which shall make general the enforcement of prices fixed by the manufacturer, effective beyond the reach of competition, by the exclusion of such customers from a general power of purchase of other goods."

The Pith of the Decision, observes our contemporary, is that a man may sell his own goods on his own terms, or he may refuse to sell them; but he must not combine with others to prevent a customer from purchasing other goods from other manufacturers, as this would constitute a combination in restraint of trade, and would be unlawful accordingly. As a result of the decision, it is asserted that the securing of uniformity in the prices of proprietary medicines by combination is now inhibited, and that if two or more members of the Association refuse, as individuals, to sell a known cutter, they may possibly render themselves liable to charges of conspiracy or combination.

The Sufficiency of an Analyst's Certificate was questioned in a Middlesex milk case heard in April last, and an interesting point in connection therewith was raised in the Queen's Bench Division on October 28. The certificate of the county analyst stated that the sample of milk examined contained 6 per cent. of added water, this opinion being based on the fact that only 7 97 per cent. solids, not fat, were present, whereas genuine milk should contain not less than 8 5 per cent. solids, not fat. The justices who originally heard the case held that the certificate was insufficient as not setting out specific quantities of all the constituent parts of the sample, and that the proceedings could not be maintained in the absence of a certificate setting out the said quantities specifically. On appeal, however, Justices Grantham and Kennedy have reversed this decision, holding that the Justices were wrong in rejecting the certificate. The analyst had done enough, the judges considered, in setting out the amount of solid substance which he found in the sample and basing his decision thereon, and the certificate was therefore held to be quite sufficient.

Western Chemists' Association of London.—At a Committee meeting held on October 28, the following gentlemen were elected officers for the ensuing year:—President, Mr. J. W. Taplin; Vice-President, Mr. J. H. Mathews; Hon.-Treasurer, Mr. J. H. Mathews; Hon.-Secretaries, Mr. H. Cracknell, 17, Craven Road, W.; Mr. A. Dyson, 35, Gloucester Road, S.W.

REVIEWS AND NOTICES OF BOOKS.

GUIDE TO THE EXAMINATION IN PRACTICAL CHEMISTRY FOR THE CONJOINT BOARD. By PERCY A. E. RICHARDS, F.I.C., F.C.S., Demonstrator of Chemistry and Public Health at the Charing Cross Hospital Medical School. Pp. 57. Price 2*s.* 6*d.* London: Baillière, Tindall, and Cox, 1896.

This is a useful guide in elementary practical chemistry. It comprises the chief reactions for the metals and acids, with separation tables for the various groups and directions for the qualitative examination of simple salts. It differs from the usual "guides" in containing instructions for the preparation of the more important salts, as well as equations of the reactions occurring in the course of the practical work. With the exception of one or two unnecessary statements, such as that sodium carbonate gives no precipitate with potassium, ammonium, and sodium salts, the information afforded is satisfactory so far as it goes, although it might have been imagined that candidates for examination in practical chemistry by the Conjoint Board would have required more substantial acquaintance with practical chemical work than that now to be acquired on the science side of every public school.

HAND-BOOK OF PHYSIOLOGY. By W. D. HALLIBURTON, M.D., F.R.S. Being the fourteenth edition of Kirke's 'Hand-book of Physiology.' Pp. 850, illustrated. Price 14*s.* London: John Murray, Albemarle Street, 1896.

In the course of numerous editions through which a popular text-book may pass, a point is reached at which revision of paragraphs no longer suffices to bring the new edition into line with the advances made in the science to which it belongs. Dr. Halliburton has wisely realised that this point had been reached in the history of Kirke's 'Handbook of Physiology.' He has therefore taken the bold course of re-writing a great part of the book, and must be warmly congratulated upon the result. He has produced a new edition which should thrive, not only upon the reputation of its predecessors, but also upon its own merits.

The style throughout is clear and simple; and as the book is written in the first place for elementary students, Dr. Halliburton has wisely reduced the discussion of doubtful points with which physiology bristles—*e.g.*, the clotting of blood, coagulation of milk functions of the liver—to the narrowest possible limits compatible with a clear statement of the pros and cons. For in the case of a student to whom the facts are new, a discussion prolonged over several pages, or even chapters, obscures the point at issue; and although the requirements of the examining bodies in medicine have greatly increased in recent years, they have not yet reached the stage at which a student must be a physiologist first and physician afterwards.

Besides treating of physiology, using the word in its narrowest sense, the book contains anatomical descriptions sufficient for the student who does not specially take up anatomy. About one hundred pages at the beginning of the book are occupied by general histology, relating chiefly to the various tissues. A short account of their development is also included. The account of bone development may be specially mentioned for its clearness. It is a subject always perplexing to the beginner: this may be because the account given in elementary books is often too condensed. The histology of the various organs is described in detail in the chapters dealing with their functions. A very full description is also given of instruments employed in physiological experiments, particularly those relating to muscle and nerve phenomena. The illustrations of these instruments are also very numerous. Some teachers, however, consider the multiplication of illustrations of doubtful benefit, for students are only too apt to regard the inspection of a good diagram or illustration as equivalent to handling and practically using the instrument itself.

Dr. Halliburton has brought the chemistry of the new edition well up to date, although one would have liked to see more space devoted to this department by so eminent an authority as Dr. Halliburton. The importance of chemistry in relation to physiology cannot be over-rated, especially in practical medicine. The subject of general metabolism, for instance, is dismissed in less than twenty pages. Nearly one hundred pages are devoted to a simple yet clear and sufficient treatment of the special senses and sense organs. The histological details are here supplemented by a large number of useful diagrams, which elp materially to explain many knotty points. At the end an outline of embryology is given, relating naturally, chiefly to the mammal.

Kirke's 'Handbook of Physiology,' in its present form, should achieve success, and will no doubt rapidly take a foremost place amongst text-books of physiology.

CHEMISTS' ASSISTANTS' ASSOCIATION.

The meeting of this Association, held on Thursday, October 29, at 103, Great Russell Street, W.C., was not quite so well attended by members as the two previous meetings. This was probably due to the "Smoker" at the Chemists' Club being held on the same evening.

Mr. C. Morley, the President, occupied the chair, and after the minutes of the previous meeting had been read by the Secretary, and duly confirmed, he proposed the following four gentlemen as being proper persons to become members of the Association:—Messrs. Harold Wilson, W. H. Hemming, M. Curtis, and W. Roberts. Their nomination was accepted.

A SIMPLE METHOD FOR OBTAINING A LOW TEMPERATURE.

The President then called upon Mr. C. E. Sage, F.C.S., who read a paper on, and described an apparatus for, obtaining a low temperature (see page 397). The simplicity of its construction seemed to commend the apparatus to all present.

In thanking Mr. Sage for the paper, Mr. Morley remarked that the apparatus was the simplest and most effective of the kind he had ever seen. Of course, persons whose business was confined to the retail trade had not much use, as a rule, for anything of that kind, but he had no doubt that in the laboratory it would be of great use. Anyone to whom such an apparatus would be an advantage could, from the diagram given, easily make a similar contrivance for himself. He did not know if anyone had a better apparatus than Mr. Sage's, but it appeared to be the very acme of perfection.

Mr. F. R. Stephens asked if a cheaper liquid than ether could be used in reducing the temperature of a sample; whether pentane or some other volatile body would not answer the same purpose?

Mr. Sage said he believed that in the *Chemical News* three or four years ago a mixture of equal parts of ether and carbon disulphide was suggested for a similar purpose by Mr. Warren, but he thought most gentlemen would object to its use on account of the strong odour arising from it.

Mr. E. W. Hill thought if carbon disulphide was used it would be preferable to suck the air out rather than to blow it through.

A FEW NOTES ABOUT FLUID EXTRACTS.

Mr. W. A. Jones then communicated a few notes on "Fluid Extracts." He said most of them were familiar with that popular class of galenicals known as "fluid extracts," and believing that most of the members present would have some practical acquaintance with the various methods of manufacturing them, he ventured to think the subject might form a suitable topic for a brief discussion. The present Pharmacopœia contained some fifteen fluid extracts, in nearly all of which the desired medicinal properties of the drug were obtained by means of a spirituous menstruum. There were many unofficial fluid extracts largely prescribed by the medical profession, *e.g.*, belladonna, calumba, gentian, henbane, quassia, etc., some of which they might perhaps see embodied in the forthcoming Pharmacopœia. Their large use was no doubt due to the fact that they very conveniently represented the drug in a

fluid form. He did not intend to criticise the directions given in the Bri ish Pharmacopœia, but he might say that they had in the 1890 'Additions' hopeful signs of a coming acceptable change in the method of making these preparations. The two fluid extracts contained therein, viz , hamamelis and hydrastis, were directed to be made on a similar principle to that employed in the United States Pharmacopœia, and he would like to see this adopted in all cases where a spirituous menstruum was employed. They had in the British Pharmacopœia, extractum cimicifugæ liquidum and extractum taraxaci liquidum, and there were two similar preparations in the United States Pharmacopœia. The B P. method was that of macerating and pressing, although in the case of cimicifuga, the second portion of the process consisted in exhausting the root by percolation. He much admired the U.S.P. process, which consisted in percolating the drug, reduced to a suitable degree of disintegration in two portions, the first being about 80 per cent. of the whole volume required, and evaporating the second portion obtained in exhausting the drug to a soft extract, dissolving it in the first portion, and making the whole up to a given bulk. Much had been written on the subject of re-percolation, and he would refer those interested to an admirable paper by Cripps in the *Pharmaceutical Journal* for June 22, 1895. To ensure the process working satisfactorily there were three very important points to be carefully observed, viz.: (1) that the disintegrated drug did not contain too much "dust," (2) that not too much menstruum be used in damping the drug, (3) that the drug be very carefully packed in the percolators.

A question of much importance to the manufacturer arose as to what was the best method to ensure a minimum loss of spirit. He found it most satisfactory to subject the marc to strong pressure when a weak spirit was the menstruum. It might be urged that many of the fluid extracts mentioned might be prepared without using spirit in exhausting the drug, it being only used as a preservative, as in the case of ergot, liquorice, etc. He would draw their attention to a sample so prepared of calumba, gentian, and rhubarb, together with a sample of each prepared according to the U.S.P. They would see a very wide difference between the two classes of preparations, and it would be apparent that it was possible to produce some of the largely used unofficial extracts at very varying costs. Mr. Jones then referred to the controversy started by *Truth* in which it was stated that three different chemists had charged three different prices for making up one and the same prescription. He thought that where unofficial fluid extracts largely entered into the composition of prescriptions, it was an easy matter to account for different prices, etc. If they would permit him to express his opinion he would say that it was imperative for pharmacists, when preparing galenicals, to make it a cardinal point that they produced the best possible preparations of drugs, the cost being of minor importance, for should they allow such a consideration to predominate, they were liable to bring upon themselves not only the approbrium of the public, but also the anathemas of the medical profession.

Mr. Morley thought the remarks of Mr. Jones were of an entirely practical nature, and ought to be very valuable to those present who had work of that kind to conduct. The opinion expressed by Mr. Jones that pharmacists, in making galenicals of their own, should strive to produce the very best it was possible to make, irrespective of the cost, was one with which he thoroughly agreed. He thought all should endeavour to obtain the best possible results in making their preparations. It was apparent to anyone with even the most casual observance that the difference in extract matter shown by the different samples was very great.

Mr. E. W. Hill asked if Mr. Jones had tried many samples, and if he had estimated the amount of extractive matter obtained—whether there was a great amount of difference in each case?

Mr. C. E. Robinson said that in making liquid extracts he had found it very useful to add a little water to the spirit.

Mr. Jones, in answer to Mr. Hill, said he had only examined those fluid extracts that he had made himself, and from the same drug he got nearly the same amount in each case. With regard to adding a little water to the spirit, he thought it preferable to use alcohol of the same strength throughout the whole process. In making preparations of fluid extracts it was essential for the medical men to say what active principle they desired to be got out of the drug, and then the pharmacist would know how to proceed to get the desired result.

A Dispensing Note.

Mr. C. E. Robinson, in introducing a short note on a dispensing difficulty, said that probably some of them had had an opportunity of observing the subject of his note, and it was one on which they would all be able to make some remarks. In dispensing the following—

Resorcin	30 gr.
Ammoniated mercury	25 gr.
White vaseline	2 ounces,

it was possible by adopting different methods to obtain two ointments which after being kept some little time would vary very much in appearance. He thought most dispensers without previous experience of this ointment would probably rub down the ammoniated mercury with a little oil and mix with part of the vaseline, and then dissolve the resorcin in a few drops of S.V.R. and incorporate with the remainder of the vaseline before finally mixing altogether. If this was done they got an ointment which after a few days shows signs of going blue, and after some time turns to a deep indigo blue. If, on the other hand, the resorcin was finely powdered and not dissolved, the ointment would remain white. He did not propose to discuss the action that went on between the resorcin and the ammoniated mercury, but it was evident that the fact of dissolving the resorcin induced the action to take place, although protected by such a large quantity of vaseline. The vaseline used was neutral, and the resorcin was quite white. He thought that any patient who obtained this ointment at different places, should one remain white and the other turn blue, would naturally be surprised, and it was to obviate this difficulty occurring with those present that he had brought the matter before them.

Mr. Morley said they were greatly indebted to Mr. Robinson for bringing this dispensing difficulty before them. There could be very little consideration needed as to what should be done with an ointment of that kind. It certainly would be very bad policy to make up an ointment that turned blue after being kept a short time. He had no suggestion to offer as to what the decomposition in the ointment shown by Mr. Robinson was due to, but it suggested contamination with iron in some way. There was no ingredient in the preparation, however, that was in any way likely to contain iron.

Mr. Hill said he was sure they were all very much obliged to Mr. Robinson for calling their attention to this matter; it might save some of them trouble in the future. He had dispensed a similar ointment, and he always rubbed down the resorcin to a fine powder; as a solvent it never seemed to go well with the vaseline. Mr. Robinson informed him that in making the ointment shown he did not use a steel knife.

Mr. Jones wished to ask if Mr. Robinson had noticed any change in the colour if only spirit were used to rub down with.

Mr. Robinson, in reply, said the same change would take place if it were rubbed down with spirit. If it was dissolved, as in the case he had mentioned, they would often find it turning blue the next day. Both the blue and the white sample he had exhibited that night had been made some five or six months.

One speaker thought it was a subject they ought not to allow to get the better of them. They all ought to make a private investigation of the matter. It was a most extraordinary thing that they should get a change of that kind and have no means of explaining it.

Mr. Moore asked if the colouring matter was soluble in water, or if the change was in the resorcin itself.

Mr. Robinson said he had not tried to find out what the colouring matter really was.

The President then asked if any other gentleman had anything they would like to call attention to, and, in response, several difficulties encountered in dispensing were presented by Mr. J. Sowden, Mr. Makepeace, and Mr. F. R Stephens, and after a short discussion on these the meeting concluded.

CAMBRIDGE PHARMACEUTICAL ASSOCIATION.

The annual meeting of the above was held at the Prince of Wales Hotel on Friday, October 16. The President, Mr. Alderman Deck, occupied the chair, and there was a fair attendance of members.

The Hon. Sec, Mr. E. Saville Peck, read the annual report, 1895–96, showing the number of meetings held for the discussion of subjects tending to the welfare of all interested in pharmacy. Mr. Peck gave an account of his visit to Liverpool as delegate of the Association to the British Pharmaceutical Conference held in that city in July, and expressed his great pleasure at the kindness he received at the hands of the Liverpool chemists.

The following officers were elected for the ensuing session :—

President.—Mr. Alderman Deck, F.C.S.

Vice-Presidents.—Mr. A. Ivatt, M.A., F.C.S. ; Mr. A. S. Campkin, J.P.

Treasurer.—Mr. H. T. Cook.

Hon. Secretaries.—Mr. E. Saville Peck, B.A. ; Mr. J. Milling.

Committee.—Mr. C. S. Addison, Mr. C. H. Church, Mr. L. Hutchins, Mr. H. J. Parsons, Mr. Moss, Mr. McAvoy.

The President then gave his inaugural address, congratulating the Association on its continued prosperity.

BRIGHTON JUNIOR ASSOCIATION OF PHARMACY.

On Wednesday, October 28, a very interesting lecture was given before this Association by Mr. Benj. Lomax, F.L.S. on "Wasps."

A detailed account was given of this much-abused creature's life, habits, structural organisation, and evolution. It may not be generally known, the lecturer said, that the wasp does a great deal more good than harm by the fact that they prey upon the smaller insect life in the air, and that during the first few months of the summer, generally commencing in May, during which time they are busy with their building and breeding operations, they very seldom sting, and it is not until July that they get troublesome. In the autumn they all die off with the exception of the young fertile females, or queens, who lie torpid through the winter, come to life again with the warmth of spring, and commence immediately to set about preparing a nest, which is done by the mastication of rotten wood, etc., into a pulpy mass, which is plastered into a shape of a bell, or rather skull cap ; inside of this she (the queen wasp) builds horizontal cells into which she lays eggs, and still continues to build more cells in series of platforms, each supported from the other by means of small pillars. The mouths of the cells are covered with a thin layer of this same paper material as soon as the eggs are deposited. The queen does not relinquish the work of building until the larvæ arrive at a state of maturity and are able to assist in the work not only of building, but of getting food together for their younger brethren, that food consisting of insects. Thus the queen wasp differs considerably from the queen bee, as she does absolutely all the work until the first batch of eggs come to perfection, and even then she continues for a time building fresh cells and feeding the young, but after a short time she leaves the building to the workers and devotes her time to laying eggs, and when this fails her she soon after dies.

A host of other extremely interesting facts were cited, and with Mr. Lomax's delightful way of fusing a subtle vein of humour with scientific facts, the lecture was made amusing as well as highly instructive.

At the conclusion of the lecture a vote of thanks was proposed by the President, Mr. A. T. Jeeves, and seconded by Mr. Howes, and very heartily accorded by all present.

MANCHESTER PHARMACEUTICAL ASSOCIATION.

THE ANTI-CUTTING MOVEMENT.

A meeting called at the request of the Proprietary Articles Trade Association was held at the Memorial Hall, Albert Square, Manchester, on Monday afternoon. Mr. G. S. Woolley presided, and amongst those present were Mr. G. R. Barclay, Mr. Charles Sanger, Mr. E. P. Sanger, Mr. Hirst (Hirst, Brook, and Hirst), Mr. Glyn-Jones (Secretary to the Association), etc.

The Chairman having briefly explained the objects of the meeting, called upon Mr. Glyn-Jones, who said his experience was that although the matter had been to a great extent thrashed out, there were yet a very large number of members of the trade who were still in the dark, not as Mr. Woolley had said as to the objects of their Association, but as to the methods by which they purposed reaching them. The organisation, as most of them knew, consisted of the three sections of the trade, the manufacturers' section, the wholesale section, and the retail section, and it was in that fact they thought they had a common ground of appeal to each section of the trade that they believed the strength of their organisation lay. There could not, he thought, be any doubt in the minds of the rank and file of the trade of the desirability of putting an end to what had become a ruinous competition in the proprietary articles of the trade. He admitted a small minority would prefer to see things as they were, and objected very much to the advantage they had—of seducing the public into their shops by listing and offering for sale branded articles at lesser prices than their competitors—being taken away. There could not be any doubt as to the advisability of stopping this "cutting." The question was as to whether it could be done or not. Now if a meeting had been held in Manchester some seven or eight months ago, they would have been in a position to have placed before them certain plans which they would have had every confidence in being able to carry out, but at the present time they came before them with a scheme which had already been put into force, and was already working satisfactorily.

The difficulties which had beset them in regard to the wholesale trade in the matter of signed agreement had been overcome by the plan by which all direct buyers of the protected articles had given to the manufacturers an agreement which bound them to do two things, one, not to sell any of the articles below a minimum wholesale price, the other, on being asked to withhold supplies from any one firm cutting prices to do so. These goods were marked, so that in the case of any firm breaking through the agreement, they would be able to trace the source of supply. He felt, as Secretary of the Association, very proud of the fact that in about nine months they had been able to put before the trade a list of articles upon which they could not be undersold, and there was more in that phrase than appeared on the surface. First of all there was a fair living profit guaranteed upon the whole of the articles, and that was of course of vital importance. But another thing rendered that list exceedingly valuable to retail chemists — they could be sure in charging that price that they were not being undersold. He took it one of their chief difficulties, and a source of great annoyance, had been that they had not known what to charge for proprietary articles. This had depended on the whims of their competitors, but in Dr. Scott's pills, Beetham's glycerin and cucumber, Powell's balsam, and others, they had a list of thirty articles, and any firm selling any one of those below cost was debarred from buying any of them.

Mr. Jones then proceeded to explain that 95 per cent. of the trade were with the Association, while 5 per cent. would persistently cut, and no doubt, he added, the howl which had gone up from the "cutting camp" during the past month would reassure retail traders of the immense possibilities of that movement, and would also show proprietors that their interests were best served by looking after the interests of the legitimate retail trader. If they wanted proof of the benefit which the Association was likely to confer on the retail trade, it was found in the determined opposition of firms such as Messrs. Boot and Messrs. Day. Its success, however, depended upon the retail traders themselves. The Association was not the outcome of any movement among the proprietors and the wholesale trade. That should be borne in mind. It originated with the retail traders, who thought they had a right to be considered, and in that lay their strength. They did not go to the proprietors and ask them to do anything unless they were prepared to do something in return, and if the retailers as a body gave them support there was no manufacturer in the land who could in the end withstand the fair demands of the large bulk of the retail trade ; but if they showed any great amount of apathy or indifference they could not expect proprietors to move in the matter. The subscription to the Association was small—five shillings—and the smallest retail trader would be benefited by joining. They had just added to the list another article, namely, Géraudel's pastilles, and any firm cutting Dr. Scott's pills or any of the other articles he had mentioned would not now get Géraudel's pastilles. The "cutter" dreaded the power of their Association, and he knew very well that if it came to a point the manufacturers would have to decide between the legitimate retail trader and the "cutter." They had several gentlemen on the platform who would tell them that in protecting their articles their business had been greatly benefited. They had also some of the biggest grocers in the land upon their list of retail members—men who were as anxious as they were that a living fair wage should be obtained. They must be prepared to show the public that what they asked was only fair and necessary to enable them to deal fairly with the manufacturers of the articles. If they did that they need not be afraid of any action that the "cutters" might take in appealing to the public.

The Chairman announced that a large number of gentlemen who were unable to attend the meeting had remitted sub-

scriptions as members. In order to get the matter before the meeting he should move the following resolution from the chair :—

"That this meeting of chemists residing in Manchester and the neighbourhood desires to express its approval of the Proprietary Articles Trade Association, and pledges itself to support it in every way, and strongly urges upon all proprietors the advisability of adding their articles to the protected list."

In moving that resolution he thanked Mr. Glyn-Jones for the very clear explanation of the objects of the meeting, and they might also compliment him upon the calm and dispassionate way in which he had treated the question. They knew it was very irritating to the average human being to be treated in the way chemists had been treated by the "cutter." At the same time those "cutters" were acting within their legal rights, and it was well to treat the question calmly, as Mr. Jones had done, and try and circumvent them in every way in their power. Speaking as a wholesale dealer, he considered this plan of the Proprietary Articles Trade Association infinitely preferable to the registration system. As Mr. Jones had pointed out, they could well understand the immense number of proprietary articles of all descriptions there was, and it was impossible, however conscientious employés might be, to see that every article had been supplied in accordance with the agreement, as it would almost put a stop to business if it had to be done. They were told last week that the Association was feeble and tottering. He did not see many signs of that at present; but supposing it were true that the Association were in that lamentable condition, he thought it was quite within the power of the chemists of Manchester and district alone, leaving out those of the whole country, to put it on its feet, but judging by the energy and zeal shown by Mr. Glyn Jones, he did not think the charge was at all borne out by circumstances. In reference to retailers putting themselves into the power of the Association, there were two things possible—putting themselves into the power of the Association or that of Messrs. Day—and of the two he suggested the least disadvantageous, and went in for the Association.

Mr. Oldfield (Oldfield and Pattinson) had much pleasure in seconding the resolution, and thought it was about time something was done to improve the prospects of the trade generally.

Mr. Barclay (Barclays, Ltd.), in supporting the resolution, emphasised what Mr. Glyn-Jones had already said about the new class of chemist which had arisen since the Pharmacy Acts were passed, whom he might describe as the philanthropic chemist. He had two sides—one he turned to the public was full of smiles and benevolence, fairy tricks, and cheap patents; but the side he turned to his brethren in the trade was full of malice and a determination to undersell him at all costs. He contended that two or three should not be allowed to intimidate about 8000 persons, and he urged all present to join the Association and protect themselves.

The resolution was supported by Mr. Taylor (Bolton), who urged that chemists should boldly meet the cutters, and support the manufacturers and wholesale dealers, by Mr. Jones, and others. Some discussion ensued as to a point raised by Mr. Taylor as to the retail traders dominating the other sections of the Association, and it was explained that the action of all the sections should be mutual in order to ensure success.

The resolution having been put and carried unanimously.

Mr. Glyn-Jones asked for gentlemen to volunteer as local secretaries in Manchester and surrounding towns, as it would be a practical step in helping on the work.

On the motion of Mr. Sanger, seconded by Mr. Hurst, a cordial vote of thanks was accorded to the Chairman for presiding.

LEGAL INTELLIGENCE.

PROCEEDINGS UNDER THE FOOD AND DRUGS ACT.

Is Beeswax a Drug?

In the Queen's Bench Division on November 2, before Mr. Justice Grantham and Mr. Justice Wright, the case of Fowle *v.* Fowle came before the Divisional Court, on a special case stated by the magistrates sitting at Cranbrook in Kent, the appellant being the Inspector under the Sale of Food and Drugs Act, and the respondent a grocer at Marden. Mr. T. Mathew appeared for the appellant, but the respondent was not represented. The facts as stated in the special case were as follow:—A man named Skinner, sent by the Inspector, went into respondent's shop and asked for a quarter of a pound of beeswax, which the respondent thereupon supplied. Skinner asked if it was pure, and respondent said he could not guarantee it. Skinner said "But you sell it as beeswax?" and the reply was Yes. Skinner thereupon took it away, and on being analysed it was found to contain 50 per cent. of paraffin. Definitions from Chambers' 'Etymological Dictionary,' and 'The Lexicon of Applied Science,' to show that a drug was any thing used in medicine, or any medicinal substance either used in its natural condition or prepared by art, or mixed with other substances to form a medicament or medicine; and the British Pharmacopœia was referred to as showing that yellow wax was used in the preparation of certain medicines, no less than twenty being mentioned, especially phosphorus pills. It was admitted that to obtain the wax mentioned in the British Pharmacopœia beeswax was melted and certain impurities taken out. It was also said that the properties of this prepared wax, when used with oil, were of a healing and emollient character, and that it was used by chemists and druggists. A witness, who was a chemist (the name not being mentioned), was unable to say what was the medicinal or healing effect of beeswax alone, nor had he ever known it used alone. He described it as being used as a vehicle only, but in his opinion there was no manner of doubt as to its being a drug. On these facts it was contended by the appellant that it was a drug and by the respondent that it was not, and in any case that it was not the sale of a drug to the prejudice of the purchaser. The Justices found: (1) That prepared beeswax, known as yellow wax, with the allied preparation known as white wax, is a substance mentioned in the British Pharmacopœia, and used in the preparation of medicines. (2) That wax used in the preparation of medicines is used as a vehicle only, and not as possessing any healing or medicinal properties, and that the sale of beeswax in this case was not in their opinion to the prejudice of the purchaser because of the statement made by the respondent to Skinner. (3) That the sale of the said beeswax was a sale by the respondent as a grocer. On these facts they held that the beeswax in this case was not a drug within the meaning of the Act; and, further, that if it were, the said sale was not to the prejudice of the purchaser, nor was the sale by the respondent as a grocer a sale of a drug within the meaning of the Act.

Mr. Justice Grantham said there was no suggestion of any fraud here. The respondent kept a grocer's shop in a small place and sold a variety of things, amongst them this beeswax. He did not know whether it was pure or not, and said so; it was probably a cheaper article than some of the finer qualities. He got that which was generally used, the constituents of which were paraffin and beeswax, which was probably more useful for some purposes than if it were pure wax. There was nothing improper in it, and he said he could not guarantee its being pure. It was very hard to say that the man should be punished because it turned out there was paraffin in it.

Mr. Mathew suggested that the grocer would know that beeswax was a thing commonly used in medicinal preparations.

Mr. Justice Grantham thought it was about the last thing he would know about it.

Mr. Mathew submitted that though he might be allowed to sell it with its natural impurities, he could not be entitled to add to it a foreign substance which might be deleterious when used in medicine.

Mr. Justice Grantham said there was no suggestion that he added the paraffin himself, he had not the slightest doubt that he bought it as it was.

Mr. Mathew went on to contend at some length that the beeswax in question must be considered the same as the yellow wax mentioned in the Pharmacopœia, which was used in making various medicinal preparations, and to point out the evil consequence which might ensue if a chemist purchased any of this wax from the respondent for use in the preparation, say, of phosphorus pills.

Mr. Justice Grantham said such a chemist ought to be fined very heavily for buying any drug from a small grocer in a little country town.

Mr. Mathew suggested there would be no negligence if he believed it to be the proper article.

Mr. Justice Grantham said it would be worse than negligence—it would be guilty knowledge. A chemist ought not to buy drugs from a grocer.

Mr. Mathew, continuing, said the grocer ought to tell the purchaser that it contained paraffin.

Mr. Justice Grantham said the grocer did not know what it contained.

Mr. Mathew suggested that if the justices were right in this case,

it would be perfectly possible for a chemist dealing with yellow wax to adulterate it and sell it in the same way.

Mr. Justice Grantham said when such a case came before the Court they would deal with it.

Mr. Mathew continued for some time longer to urge that beeswax was the same as yellow wax, and was a drug as being used in medicine, and cited several other dictionaries and cyclopædias.

Mr. Justice Wright asked whether bread, which was often used medicinally in the form of a poultice, was a drug?

Mr. Mathew said he should contend if it were mentioned in the Pharmacopœia that it would be.

Mr. Justice Grantham suggested that Quaker oats would also come within the definition, and also water, which entered into most fluid mixtures.

Mr. Justice Wright also put the case of wine and brandy.

Mr. Mathew said they were clearly not drugs, but anyone who adulterated wine would be liable under the term "food or drink." He continued the argument for some time longer, and cited various cases, one of which was with regard to the sale of saffron.

Mr. Justice Grantham, in giving judgment, said as no one appeared on behalf of the respondent in this case, the Court had not had the benefit of the argument which would have been used by counsel on his side, but it was the duty of the Court to watch carefully the interest of a person not represented, and make such suggestions as occurred to them, whether for or against the argument presented by the appellant. It certainly struck both his learned brother and himself that there were a great many difficulties in his way, and they had come to the conclusion that it was not desirable to interfere with the decision of the magistrates in this case, but that it was the right decision. In the first place, speaking for himself, he was not prepared to admit that beeswas was a drug when sold as it was by a grocer in a country shop, and not sold as a drug by him. It might be possible by straining a point, and going into all the pharmacopœias and dictionaries that could be found, that in one or more of them you might find such a definition as would bring this within it, but it was quite clear from most of the definitions read by the learned counsel that this would not come within it, although it might in some others. He thought the magistrates were right in referring to the fact that this was sold by a grocer; everyone could no doubt think of instances in which beeswax was used not as a drug. The primary use of beeswax used to be to polish mahogany tables, and you might use a drug for that purpose, but that was not a medicinal purpose, except so far as it would act medicinally for the benefit of the person polishing the table using a great deal of elbow grease, which would be a very healthful occupation. Not to give other instances in which beeswax was used, which were certainly not medicinal, he should think not one grocer in a thousand ever used beeswax as a drug; he sold it for the ordinary purposes of trade. As he had said before, if a doctor were to buy beeswax as a medicine he would not go to the ordinary country grocer and buy the cheap beeswax which was sold there; it would be very culpable and negligent on his part if he did. The magistrates had to deal with the facts as they were and people as they found them, and the knowledge they had of the kind of trade they did. It seemed to have been assumed on behalf of the appellant that the grocer made his beeswax, but that was not so, he bought it. He was asked if it was pure, he said "I do not know, I cannot tell you that it is pure; it is what we sell, we have to sell beeswax, but I do not know what its constituents are." Thereupon the man bought it, and it would be very hard indeed after that if he were to come and say, because there was some other substance in it, he was to be fined. Under these circumstances he thought the magistrates were quite right in dismissing the application.

Mr. Justice Wright said he was of the same opinion, on the ground that it must be in many cases a question of fact whether a particular thing was a food or a drug or something else which the magistrates must determine in each case. In this case he thought they had rightly determined. Take, for instance, turpentine. Turpentine, if sold to be used by a carpenter, ought not to be held to be a drug for the purpose of this Act, or resin. He supposed both turpentine and resin were used in medicine, and if sold by a chemist to be used in medicine it would be a drug, but if resin were sold to be used by a musician he should say it was not a drug. Another point which seemed to him much more important, whether the mere fact of the seller saying that he could not guarantee the article to be pure would prevent it being to the prejudice of the purchaser, he would rather not decide at present; but certainly the case cited was a very different one from the present.

NEW IDEAS.

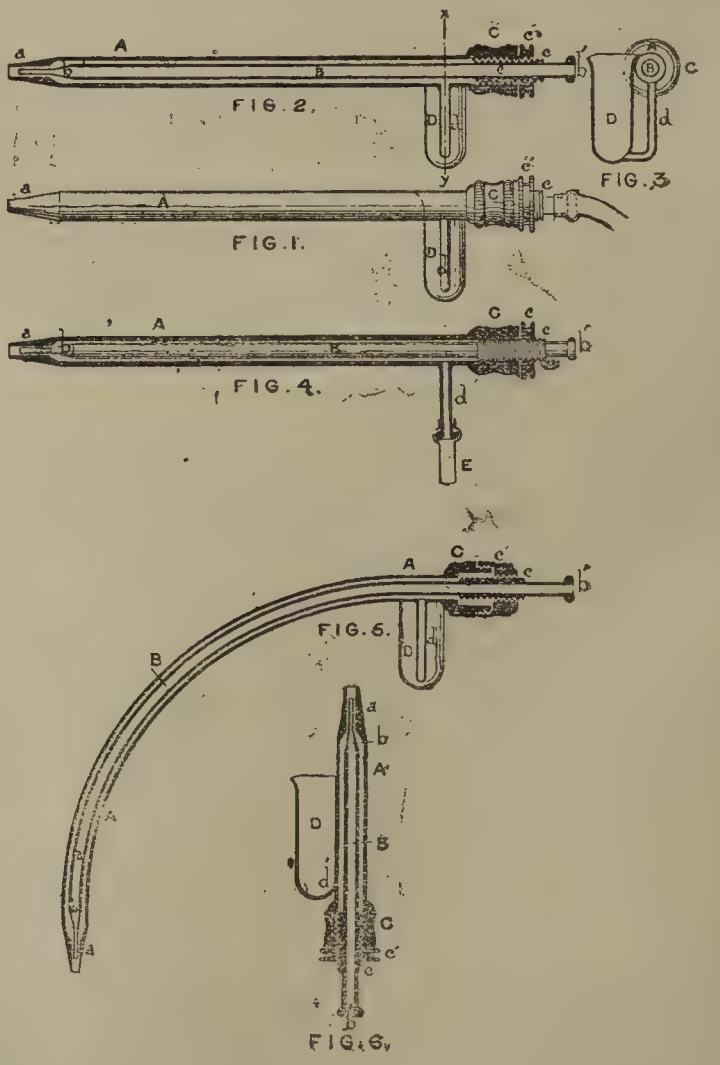
[Inventors and manufacturers are invited to submit specimens of novelties, descriptive notices of which will be inserted for the information of readers of the Journal. Whenever possible, illustrative blocks adapted to the width of the Journal columns should accompany the particulars sent. Address: Editorial Department, 17, Bloomsbury Square, W.C.]

CHLORIDE OF GOLD FOR PHOTOGRAPHERS.

The chief requisites in chloride of gold prepared for photographic purposes are that it should be free from acidity and keep well. The preparation offered by FUERST BROS., 17, Philpot Lane, E.C.—the "Axe Brand" chloride of gold—is satisfactory in both respects. It is really the double salt—therefore much more suitable for the required purpose—and contains the equivalent of seven grains of pure gold in each fifteen grains. Either long or bulb-shaped tubes are supplied, containing fifteen, thirty, or sixty grains each, and also bearing a guarantee label stating the quantity of pure gold present. Chemical examination of the salt proves the makers' claims regarding it to be well founded.

A CELLULOID SPRAY PRODUCER.

No cleanlier or lighter spray producer can be possible than that made by Mr. THOMAS WOODRUFF, pharmaceutical chemist, Withington, Manchester, and the only objection to it is one from the maker's point of view—that it is not likely to get broken and require replacement sufficiently often It is made in three forms, represented in the illustration, so as to allow of direct action of the spray on the larynx, pharynx, or nasal cavity. Being made of celluloid, this spray producer has all the advantages of glass without the risk of fracture; all parts unscrew so as to allow of thorough cleansing; the inner tube can be adjusted to a nicety so as to produce a spray of varying degrees of fineness; and a measured quantity of medicament can be administered without any loss.



AMERICAN MILLED SOAPS.

Whilst attention has been attracted in perhaps undue measure to German competition with British industry, less consideration than they deserve has been given to certain American manufactures, such, for example, as that of milled soaps. But the undoubted attractiveness of specimens of toilet soaps prepared by CHAS. F. MILLER, Lancaster, Pa., U.S.A., proves nevertheless that, in this direction at least, American enterprise is a factor to be taken into consideration by manufacturers in this country. Both as to quality and price these soaps compare favourably with better known brands in the market, and one especial advantage on the side of the American products is the fact that the prices are protected and cutters will not be supplied. From the numerous varieties may be singled out for favourable mention, Water-Lily Complexion Soap, Royal Magnolia, Honey, Oatmeal, True Violet, Sweet Violet, Rose Geranium, Witch Hazel and Celery, Cream White Glycerin, and Dr. Raub's Medicated Cutaneous Soap. All these are in elegant fancy wrappers and packed in boxes of three tablets. The Majestic Toilet Soap and Purity Soap, supplied in boxes containing a dozen tablets, are equally good in their way, though not specially wrapped and consequently less expensive. A dainty line for Christmas trade is America's Good Baby, each baby moulded in excellent toilet soap and reposing in a wool-lined nest of its own. Though English babies are not scarce, some eighty gross or more of the Yankee supplementary ones are now on their way to our shores and mostly sold already, so those who require any must intimate their wants to Messrs. LORIMER AND CO., Britannia Row, Islington, N., forthwith. Buyers who can make up fifty pound orders may be supplied direct from the States on application to Mr. MILLER'S wholesale depôt at 77, Gray's Inn Road, London, and purchasers to this amount may also secure the sole right to retail the soaps in their respective towns or districts.

SOME WINTER REQUISITES.

Reference has already been made in these columns to Messrs. LORIMER AND CO.'S solution of the cut-rate problem, and in referring to some special lines to which they now direct attention, it is unnecessary to do more than repeat that as far as possible the retail prices of the articles offered are protected, and a fair profit is thus secured to retailers. In other cases the articles are supplied bearing the buyer's own name. Space will not permit of more than a brief allusion to the different preparations, but it should suffice to say that readers who test them for themselves are not likely to be disappointed. They include extract of malt put up to suit buyers, with attractive labels and in cartoon cases; petroleum emulsion, containing fifty per cent. of petroleum; rennet powder, each dozen being accompanied by a number of free samples for distribution to customers; fluid beef, in bottles to retail at 2*s.* 6*d.* each; a standard beef extract, an excellent coca wine, and a cheap and good eau-de-Cologne (Lion brand).

OBITUARY.

WILLIAMS.—On October 22, Hugh Maurice Williams, Chemist and Druggist, of Prescot, Lancs. Aged 58.

BAXTER.—On October 23, the wife of William Walmisley Baxter, Pharmaceutical Chemist, Bromley, Kent. Aged 67. [*Corrected Notice.*]

GIMSON.—On October 27, Joseph Gimson, Chemist and Druggist, of Cambridge. Aged 44.

PEPPER.—On October 28, John Pepper, Pharmaceutical Chemist, late of Bayley Street, Tottenham Court Road, W.C. Aged 74. Mr. Pepper who died at Eaton Lodge, Putney, had been a member of the Pharmaceutical Society since 1853.

JENKS.—On October 30, William Jenks, Chemist and Druggist, of Wandsworth. Mr. Jenks had been an Associate of the Pharmaceutical Society since 1874, and for many years on the dispensing staff at St. Bartholomew's Hospital, in which position he won the respect and esteem of all his colleagues.

MASON.—On November 2, Alfred Henry Mason, of the firm of Seabury and Johnson, New York. Mr. Mason died of pneumonia after a few hours' illness, and his death will be regretted by many friends. He was a member of the Pharmacy Club, and previous to settling in America he greatly interested himself in pharmaceutical matters in London. He was also a member of the Annual Dinner Committee, and regularly attended the official functions of the Pharmaceutical Society of Great Britain whilst resident in this country.

CORRESPONDENCE.

FOREIGN COMPETITION.

Sir,—Whilst in your article on p. 387 of last issue you deride the many people who are "ever ready to fall down and worship at the feet of some unstable Colossus raised by the most recent alarmist," might I not ask whether your article is not sufficient to stamp you as "the most recent alarmist"? But this is not my point. You refer to the Jena glass, and state that it has effected a revolution in optical science. As an old photographer and chemist, I protest against such a sweeping and wholesale statement. Before the introduction of the Jena glass we had lenses which none of the modern lenses could equal, and with which work could be turned out that the present day rarely sees rivalled.

London, November 2, 1896. AN OLD HAND (62/28).

*** This letter is a good specimen of the fine old crusted conservatism that serves as the base of many an "unstable Colossus." Its publication, however, affords an opportunity of showing the absurdity of a conceit that is widely held but certainly not justifiable, and a detailed explanation of the statement objected to by our correspondent will accordingly appear in next week's Journal.—[ED. *Pharm. Journ.*]

THE SALE OF CARBOLIC ACID.

Sir,—I have been thinking that carbolic acid should be only supplied to the public in a dilute state, say one part of carbolic acid and fourteen of water or other diluent, except in the case of oils or fats, when it might be permitted stronger; the cruder varieties would require some emulsifying agent to become miscible with water. Carbolic acid, whether pure or otherwise, should not be allowed to find its way for sale to the uninitiated, but only supplied to doctors or chemists for their use in dispensing and making its preparations, or to others holding a special permit from Government, when they can show it is required for permissible purposes. I believe that carbolic acid so treated would not be dangerous to the commonweal, though strong enough for all purposes for which it is generally used. In most instances, of course, it would require much further dilution. There would be the inconvenience of the bulkiness, but I believe the comparative innocuousness of the diluted poison would outweigh that objection. In most instances would-be suicides could be resuscitated after dosing themselves with this attenuation.

Harlesden, November 1, 1896. J. W. TAPLIN.

PRESCRIBING AND DISPENSING.

Sir,—In your issue of the 31st ult., Dr. Luff ignores the diagnostic literature the enterprising Yankee nostrum monger so freely distributes to instruct the prescribing medicine man. In a late issue forwarded to me is mentioned the case of a woman "which had spent all her living upon physicians, neither could be relieved of any," also was acquainted with the interiors of the metropolitan hospitals, receiving but temporary relief, and was led to consult a Whitechapel medicine vendor, who pronounced that "the doctors had misinterpreted the sign in treating for bronchitis, the mucous rales." I presume he was a stethoscope man, indicating dilation of the heart. A 2*s.* 9*d.* bottle of Mother Seigel relieved the disability, and sent her rejoicing away. This evidently fulfils the public expectancy, and what more is there to be desired?

Carlisle, November 3, 1896. JAMES FOSTER.

Sir,—Whilst your correspondent, Dr. Luff, takes exception to the tone of my previous letter, he only reiterates what I wished to convey therein—viz., to disclaim any right on the part of chemists to use professionally the instruments named. Nor did I endeavour to claim for chemists the possession of knowledge for the distinction and diagnosis of minor ailments, but rather left that knowledge to the public, whose servants we profess to be.

Winchester, November 4, 1896. S. G. BARTLETT.

"THE AIM OF PRELIMINARY EDUCATION."

Sir,—The subject of Mr. Carter's address, or rather that part of it in which the correspondence has had its origin, is practically interminable, and principally for this reason. In it exists the mistake of applying the methods of exact science to a subject which is not amenable to such treatment. A living language is a tradition, and custom is the authority from which there is no appeal. It is void to ask the reason of this idiom or that construction. The answer is "custom forbids, or custom sanctions." It is futile for the etymologists to protest that "solemn" really means "anniversary,"

that "fatal" should not mean "mortal." Their united efforts would be unequal to rescue the word "chronic" from a change in meaning which is going on under our very eyes. Grammar is made out of language, language is not made out of grammar. The man who does not conform to the etiquette of language, even with strict grammar on his side, will earn for himself the cognomen pedant—not grammarian.

I will dip into a few particulars in the essay and subsequent letters in view of the general remarks just made. Mr. Carter approves of the expression "in circumstances," and objects to "under circumstances," and pronounces the latter to be ignorant or careless writing. I should like to know by what authority he says these things. Custom is against him. Both prepositions are used in good English interchangeably, and the meaning conveyed is precisely the same. "Above all circumstances of time and place" is held to be good; "under all circumstances of time and place" is not less good. Nothing but custom can rule here, however, and verbal exegesis is beside the mark. It is custom even which constitutes the authorities. Shakespeare did not write as the authority he has since become. A good deal of his work was thought little of at the time.

Again, Mr. Carter's strictures concerning "reliable" are unhappy, for towards the end of his address he quotes Cobbett approvingly on an English sentence—"Not only not liable to be misunderstood." If "liable" passes muster why not "reliable" and "unreliable"? All three words are built on the Latin "ligo"—I tie; "religo"—I tie twice; that is, I make doubly secure. Yet again, Mr. Carter's reference to formal grammar is unhappy too. His rule about the suffix "able" is ingenious and may be useful, but is not always true. What can be made of the word "capable" by his process? By an active verb he means, presumably, a transitive verb. Active and passive have to do with "voice." And by past participle he may be supposed to mean perfect participle passive. To question the existence and meaning of the word "reliable" is puerile, seeing it is in every dictionary and on everybody's lips.

Clifton, November 3, 1896. T. C. Richards.

Sir,—Kindly allow me to reply briefly to "Lincolne, Senior." My first quotation is "garbled" only in the sense in which the word was originally used, namely, "sifted from unnecessary matter"; "garble," however, is now used only in a bad sense, and is misapplied by your correspondent. He says my last quotation is misapplied, and though he gives us his reason for saying so, I have no idea what he means. He seemed to think that Mr. Carter used the word "around" as "surrounding in a particular direction," while he himself believed it might mean "around" in such a way that the enclosed body could be "under." I noted several things which "around" does not imply, and gave its meaning as "simply around," *i.e.*, "all round."

"Lincolne, Senior," finds fault with my use of inverted commas, and charges me with overlooking an obvious duty in my "blind hurry." I believe inverted commas have more than one use; and I can assure your correspondent that I was in no hurry to attack him. But, Mr. Editor, what is a "blind hurry"? A hurry may be such as to partially blind him who hurries, but a "blind hurry!" I cannot follow your correspondent's reference to the point in dispute. He seems to have confounded his own reading of "standing around" with that which he ascribed to Mr. Carter.

October 31, 1896. Midlothian.

Caffeine as a Base.

Sir,—Caffeine is commonly referred to as an alkaloid, but possesses some points of difference from this group of substances, amongst which notably is the fact that it is not precipitated by Mayer's alkaloidal reagent (potassio-mercuric iodide). I find that it behaves like other alkaloids in giving a red precipitate with potassio-bismuthic iodide solution, and as this is not recorded in books to which I have had access, have thought it desirable to send this note, with the hope of seeing the positive as well as the negative test inserted in the forthcoming Pharmacopœia, which in my opinion would usefully expand the official descriptive tests.

Shirley, November 3, 1896. Hy. H. Marshall.

Curious Prescriptions.

Sir,—I enclose copies of two prescriptions which I had to dispense to-day, and have thought worthy of bringing under your notice as curiosities. I enclose prescriber's name and address for your information, and should like to know if any of your readers have come across similar specimens in the course of their experiences.

℞	Hyd. Perchlor.	gr. ij.
	Resorcin	gr. xx.
	Aq. Picis	ʒij.
	Glycerin	℥x.
	Aq. Sambuci Trip. ad.	ʒvi.

M. ft. lotio.

℞	Acid. Carbolici	ʒi.
	Glyc. pr.	ʒi.
	Spt. Chlorof.	ʒj.
	Camphoræ	gr. xx.
	Aq. Picis Dest.	ʒij.
	Aq. Cinnam. Trip. ad.	ʒvj.

M. ft. lotio.

Romford, November 3, 1896. D. Martin.

ANSWERS TO QUERIES.

[*Queries addressed to the "Editorial Department, 17, Bloomsbury Square, W.C.," will be replied to in the Journal as early as possible after receipt, but the Editor cannot undertake to reply to them through the post, nor is it always possible to publish answers the same week. Questions on different subjects should be written on separate slips of paper, each of which should bear the sender's name or initials. Readers requiring working formulæ for special preparations, and intimating their wants to the Editor, will be assisted as far as may by practicable. The word "parts," when used in formulæ, invariable indicates parts by weight. Anonymous queries will be ignored.*]

Plant Identified.—It is a specimen of *Erigeron acris* that you send. [*Reply to* M. G.—62/13.]

Analysis of Foods and Drugs.—Wynter Blyth's 'Foods and their Composition and Analysis' (Griffin, 21*s.*) is one of the most important recent works on the subject, whilst Pearmain and Moore's 'Analysis of Foods and Drugs' (Baillière, 3*s.* 6*d.*), though much smaller, is very good. [*Reply to* A. A. M.—62/22.]

Preservative Wanted.—Try two minims of formalin to each pint. But why not make your essence with cold water, by re-percolation? You should not then require any preservative. [*Reply to* Coffee.—62/25.]

Glossary of Botanical Terms.—The most recent is that at the end of the second volume of Reynolds Green's 'Manual of Botany,' which every pharmacist should possess. [*Reply to* M. C.—62/31.]

Thymol in Mixtures.—You do not state what else is present in the mixture. The addition of ten per cent. of glycerin is said to increase the solubility of thymol in water threefold. Solutions in alcohol also bear dilution with water to a considerable extent without separating. Volckmann's solution is prepared by dissolving thymol, 1 part, in alcohol, 20, and glycerin, 20, then diluting with water to 1000 parts. [*Reply to* M. C.—62/31.]

CORRECTION.

Benevolent Fund.—Mr. C. A. Blamey points out that the sense of the last sentence in his letter published last week was quite spoiled by the substitution of the words "our Society" for "one Society." We regret that the wicked compositor has broken out again, and trust that the slight error will not have the effect of preventing any Association acting upon Mr. Blamey's excellent suggestion.

PUBLICATION RECEIVED.

Pictorial History of Ancient Pharmacy; with Sketches of Early Medical Practice. By Hermann Peters. Translated from the German and revised, with numerous additions, by Dr. William Netter. Pp. 184. Chicago: G. P. Engelhard and Co. 1896. From the Publishers.

Communications, Letters, etc., have been received from Messrs. Baxter, Blamey, Burroughs, Carteighe, Carter, Collins, Corfield, Giles, Greenish, Hill, Luff, Marsden, Marshall, Martin, Mitchell, Moore, Reynolds, Richards, Sage, Taplin, Wall, Wellcome, Wendon.

ROYAL COLLEGE OF SURGEONS

THE DISCOVERY OF ARGON AND HELIUM.*

BY J. NORMAN COLLIE, PH.D., F.R.S.
Professor of Chemistry to the Pharmaceutical Society.

In the early days air was looked upon as an elementary substance, and for many hundreds of years it was considered one of the four elements—earth, air, fire and water being the four. These elements were not looked upon quite in the same light as we look upon elements nowadays. They had more to do with the properties of substances in general, and not with actual elementary substances, and it was not till about two hundred years ago that definite ideas began to be collected on the subject of air, and it was due to an English chemist—I think many of the great discoveries in chemistry have been due to English chemists—that our ideas on the subject of air first began to take a definite form. It was towards the end of the seventeenth century—over two hundred years ago—that Robert Boyle, an Englishman, first of all published a work on the air, and the various subjects which related to the air. I have a slide here which I should like to show you of a portrait of Robert Boyle himself. I should like to show you the portraits of several of those chemists who worked on air, and who brought the knowledge that we possess of air up to the beginning of this century. Robert Boyle, the first I will mention, was a chemist who investigated not only air, but a great many other substances besides, but he was particularly interested in air, and its various properties. He had rather vague notions, however, on the subject of air, but he was one of the first chemists who combated the old idea of earth, air, fire and water, being elements, and he specially points out that there is no reason why we should in any way limit the number of elementary substances to four, and no reason why air should be an elementary substance; in fact, he seemed to think there were a great many different kinds of air, as they were called in those days—"gas" being a much later term, and that the different kinds of "gases" he investigated depended upon the various properties of the substances from which they were produced.

The next portrait of a chemist who had to deal with air is also that of an Englishman, named John Mayow. He was a doctor who lived about the same time as Robert Boyle, and he also published some work on the subject of air. He proved that there was no doubt one particular substance present which he called fiery air, and that it was due to this fiery air, which was present in ordinary air, that enabled substances to burn. This was of very great importance, but was lost sight of for more than a hundred years. Mayow also pointed out that this particular air, which he called fiery air, was present also in nitre or saltpetre, and in this way he discovered facts which were re-discovered very much later by a French chemist named Lavoisier, at the end of last century.

The next English chemist who had to do with air, and also made a very large number of experiments, was a clergyman of the name of Stephen Hales. He was more interested in the rise of sap in plants and similar substances, and investigations of that description, but he also made a very large number of experiments on heating substances in closed vessels. Collecting various airs or gases, as we call them now, above water. He also proved that probably air contained more than one particular kind of air, and he examined the different airs which were produced by the decomposition of all sorts of substances by heat and otherwise, collected them above water, and made investigations on them, but again, his investigations seem rather to have been lost sight of, and not to further science in any very great way. Air was still looked upon by the chemist as an elementary substance, and not a substance which was composed of different kinds of matter.

About a century later than these three chemists came some more English chemists, who still further advanced our knowledge on the subject of air. This is a portrait of Dr. Black. Dr. Black lived in Edinburgh, and he was the first to point out that there was present in the air what he called fixed air, because he was able to absorb this air from the atmosphere by means of such substances as caustic potash, and also quicklime. He thought by this process the air became fixed or absorbed by these solid substances, the potash and the lime, and proved that after it had been fixed or absorbed in that manner it could be produced again either by the addition of acids or by heating. He was the first to prove conclusively that a substance named carbonic acid, or, as he called it, fixed air, was present in the atmosphere, and this was really one of the first noticeable facts in our knowledge of the air.

This is a portrait of another Scotch chemist, of the name of Rutherford. He did not, however, study chemistry very completely, and he did not study it all his life, but he is the discoverer of one of the constituents of air, which he called mephitic air, and we now know it by the name of nitrogen. It is that gas which is present in the largest proportion in air; about 80 per cent. of air, or four-fifths, being composed of this gas nitrogen, and Rutherford was the first to point out that this mephitic air was different from the fixed air that Black obtained, also that it would not support combustion, that substances would not burn in it, and also the more important fact that it would not support life—that animals died in it. Rutherford, therefore, was the discoverer of nitrogen. After having absorbed the other gases in the air by means of various heated substances which absorbed them, such as oxygen, and so on, he obtained this gas nitrogen.

The next portrait is of another English chemist of the name of Dr. Priestley. He was the discoverer of the other chief constituent of air. About 120 years ago he obtained oxygen in the pure state for the first time, and proved that this gas, which he called dephlogisticated air, was present in ordinary air, and that it was due to this gas that animals could live in ordinary air, and also that substances burnt very much more brilliantly in pure oxygen or pure dephlogistic air than in ordinary air. That brings us to the end of the last century, and these are the people who had, in fact, most to do with the discovery of the various gases in the air. Black discovered the carbonic acid, Rutherford the nitrogen, and Dr. Priestley the oxygen, the oxygen and nitrogen being the two most important constituents in the atmosphere.

This portrait is a portrait of the French chemist Lavoisier, and perhaps in a way he was greater than all of them. It was Lavoisier who gathered up all these scattered details; it was Lavoisier who put them together; and from the absolute—one might almost call it—ruin of the old theory (the phlogistic theory) he built up a new edifice on which the modern system of chemistry stands. He explained first of all in the way we now accept the true theory of combustion. He showed us how it was that substances were burnt in air, and what happened when they did burn in the air—that they absorbed the gas oxygen which was present there, and in doing so gave out light and heat, and he built up the whole theory of combustion such as you understand it at the present day. He took up all the facts the other chemists had discovered, and turned them to his own use and that of chemists in general.

The last portrait I have to show you is that of another Englishman. This was Henry Cavendish, who was by far the most accurate worker of them all. Cavendish without doubt obtained this gas that I am going to tell you about to-night, named argon,

* Lecture delivered before the Pharmaceutical Society, November 10.

and later on I will tell you how he did it. At present I will only mention that he was the discoverer of the composition of water as well. His analyses of air are almost as accurate as the most accurate analyses ever made, and they were made by the most incomplete and most inaccurate pieces of apparatus.

All this brings us to the beginning of the century, and clears the way for what I have now to tell you about the discovery of the gas argon. At the beginning of the century people thought that they knew all about the air, and that there was no more to know; that all the gases had been discovered, and that there were no more to discover; but it was only two years ago that there suddenly burst on the world this wonderful discovery of the gas argon. Of all the places to find it, in the air was the most unlikely, for, as I have said, every chemist thought the very last had been said on the subject of ordinary air. The reason that argon had not been discovered before was that all analyses of air had been conducted in the following way: First of all, impurities such as water vapour and carbonic acid had been got rid of by absorption; there was then left merely pure oxygen and nitrogen, then the oxygen was absorbed, and the nitrogen was left; no easy method of absorbing nitrogen being then known. The residue was supposed to be pure nitrogen, but as it so turned out, the residue was by no means pure nitrogen, it contained over one per cent. of this gas argon, which had never been separated out from the nitrogen before. This discovery, like a great many discoveries, although it burst upon the world and people heard nothing about it until they suddenly heard that the gas had been discovered, was a discovery which had been built up step by step. Few discoveries are made suddenly, they usually come by hard persistent scientific work, and argon is no exception to that rule, whilst helium is no exception either. The work which led up to this was due to some excessively accurate work that Lord Rayleigh had been carrying out on the actual densities or weights of given volumes of various gases. About ten years ago he started weighing oxygen and hydrogen, trying to get them as pure as possible, and to find out exactly to the third and fourth place of decimals what a given volume of these gases weighed. After he had done this, in the year 1892 he prepared nitrogen from a great number of different sources, and he found that so long as he prepared nitrogen by chemical process, by the decomposition of ordinary nitrogen compounds, the nitrogen always weighed exactly the same. When, however, he prepared his nitrogen from air by purifying the air and absorbing everything in it except the nitrogen, this nitrogen present in the air did not weigh quite the same, but very nearly the same as the nitrogen obtained from other sources. These results would, in the hands of most people, have meant nothing; but Lord Rayleigh had spent many years at the work, and he was quite certain that this was due to something he could not explain. First of all he thought it was the chemical impurities that were present, and he tried his best to get rid of every impurity, still he found that this nitrogen which was obtained from the air was too heavy, by a very little but still it was too heavy, and he was extremely puzzled and could not find out what the reason of it was; so he put the matter in the hands of Professor Ramsay; he and Professor Ramsay joined forces, and then came the discovery of argon. It was perfectly simple; it was the nitrogen which now had to be absorbed; a residue was left, and that residue was argon. The difficulty, however, was to absorb nitrogen, because no substance easily absorbs nitrogen, and the way in which it was done was by means of magnesium. Magnesium absorbs nitrogen very readily at a red heat, and after it has been heated for a long time, and the nitrogen gas passed round and round ver the magnesium, then finally there is a residue left, and that residue is argon. I have a slide here showing the various densities of these gases that Lord Rayleigh obtained.

The way in which nitrogen was absorbed afterwards, when it got down to a small bulk, is shown on the next slide. The water in the vessel contains caustic soda. There are two platinum points connected by wires to an apparatus for making sparks. If gas containing the last traces of nitrogen, which is difficult to be got rid of by means of magnesium, is introduced into such an apparatus with oxygen, and the electric spark be allowed to pass between the two points b and d, the nitrogen will combine with the oxygen and form a substance which can be absorbed in the soda solution. That is the way of getting rid of the last traces of nitrogen; and there are then left only argon and oxygen; the oxygen can be absorbed by any ordinary reagent, such as phosphorus.

The next slide shows a rather more elaborate apparatus for dealing with a larger quantity. The electrodes here dip down so as to touch the surface of the liquid soda. That gives a larger space, and combination takes place more readily. To keep it cool Lord Rayleigh had occasionally a spray of soda running up to cool the top of the vessel. It is an improved apparatus for working on larger quantities.

The next slide shows a still further improvement in the apparatus. This is one in which the electric spark is allowed to play between the two tubes. The section shows the bath, which is cooled by means of water.

Next comes a diagram which shows the apparatus that Professor Ramsay used first of all for the absorption of nitrogen. It contains various absorbents for absorbing nitrogen and other gases present in ordinary atmospheric nitrogen. Starting at A by letting water run in, the gas is sent through the whole apparatus into B, and when it gets there it can be sent back again into A, and so it may be passed backwards and forwards. In the various parts of the appparatus are phosphorus pentoxide to dry the gas, copper to get rid of the oxygen, copper oxide to get rid of the hydrogen, soda and lime to get rid of the acid vapours, and metallic magnesium; thus all the various impurities in the gas are absorbed, and finally only argon is left.

The next diagram represents apparatus for conducting operations on a larger scale. It is an automatic arrangement for making the gas circulate round and round, and is a very effective apparatus for the manufacture of argon on a large scale.

After argon had been obtained in this way, the difficulty was to find out how it differed from other substances, and unless chemists had been able to make use of the electric discharge through a gas they never would have been able to find out that this argon was different from ordinary nitrogen or any other element. A great many substances are able to give out light when they are subjected to the electric discharge, and I will now show you three extremely beautiful experiments, by means of apparatus lent me by Mr. Jackson, of King's College. The first will show you how a solid emits light when submitted to an electric discharge, the second a liquid, and the third a gas, and in each case you will find that we get a very beautiful light given out. In this vessel I have some ordinary lime, made by igniting bits of calc spar. I will connect it with a battery producing sparks, and when I turn on the current we shall find this solid produces a most beautiful light.

The next experiment deals with a liquid, a solution of sulphate of quinine, which you will see gives out a beautiful blue light.

Finally, I will take a gas and show you how we can, by passing an electric discharge through it, get it to light up just in the same way as the solid and the liquid. It is a long tube filled with air; in its normal condition it gives no light, but it is connected with an air pump, and as I gradually exhaust the air you will see how the light begins to

appear and increases as the vacuum becomes more perfect. When I turn the stopcock and allow air to enter it diminishes, and finally disappears. If it had not been for the power of lighting up gases in that way by electricity, it would have been extremely difficult to detect argon in small quantities.

All gases can be lit up by means of the electric current, if they are exhausted to a sufficient degree of rarity. I have several tubes here containing different gases, which I should like to show you. Some contain air, one contains hydrogen, and one carbonic acid, and each gas gives a different kind of light. [These experiments were then shown.]

Now I will show you a tube of the gas argon. Argon can be made to give out two different kinds of light when excited by means of the electric current, one a purple, and the other a beautiful blue. I will first show you the purple. That tube is the historic argon tube. It was lent me by Professor Ramsay, and is the one which was used for the measurement of the argon lines by Mr. Crookes, and is the one which has been shown at all the different exhibitions of argon. It owes its beautiful colour to its long life. There are very few argon tubes which give anything like the brilliancy of this, in fact, I believe there are none, because there are none so pure. By this incessant violent knocking of the atoms of the gas against the sides of the tube and against each other, it becomes purer and purer, as the other gases get absorbed by the electrodes which are made of magnesium, so that this is a perfectly pure sample of argon inside the tube. Now I want you to see the wonderful change that takes place in the argon light the moment I put a Leyden jar with a spark gap into the circuit. It now becomes a beautiful blue colour.

This light was examined by the spectrum and found to give out various lines, which showed that it was different to any other gas. It was also found on weighing the gas that it was heavier than ordinary nitrogen, being twenty times heavier than hydrogen, whilst ordinary nitrogen is only fourteen and a half times heavier, and therefore the discovery was put on a firm basis at once.

Now we come to the other new gas, helium, which was the direct outcome of this piece of work on argon. The gas which is given off when certain minerals are dissolved in acids is usually carbonic acid, and there was a curious mineral which Professor Ramsay's attention was called to, which is found in America and also in Sweden, called cleveite. An American chemist named Hildebrand had worked at it and got a large quantity of gas from it, and on examining it carefully he came to the conclusion that it was nitrogen. Professor Ramsay's attention was called to it in order that possibly he might be able to prove that it was argon, for it was a very curious thing for a mineral to give off nitrogen. Professor Ramsay, immediately he heard of it, obtained some of the mineral, dissolved it in acid, heated it, and got the gas off. It was on a Friday afternoon that a tube was filled and looked at through the spectroscope. The first thing we noticed was a magnificent brilliant yellow line. The next week Professor Ramsay was going over to France to give an address to the Académie des Sciences in Paris on argon. When on the Friday afternoon we examined this gas from the cleveite, the brilliant yellow line at first suggested the element sodium, for it looked exactly like the sodium line, which is a yellow line, or rather a double one. I at once said the tube must be very dirty; Professor Ramsay said, however, "it is perfectly clean, but it is perfectly easy to test it: produce the yellow sodium line and compare it, and if the two lines coincide then it is sodium, if not, it is something else." This was done, and at once we saw that it was not the sodium line, for it was on one side of it, and at once helium was suggested. The reason for that was that about thirty years ago, during an eclipse of the sun, Professors Frankland and Norman Lockyer made a large number of photographic and spectroscopic examinations of the corona, *i.e.*, the extreme outside of the sun, the part which is seen only during eclipses, where great volumes of incandescent gases are shot out hundreds of thousands of miles in great tornadoes. These examinations of the sun's corona revealed a brilliant yellow line. This yellow line was unknown at the time and corresponded to no known element on the earth, so Norman Lockyer suggested calling it helium. It had been seen at this particular part of the sun. It was of interest, because only the very lightest gases such as hydrogen existed there, and here was another gas which, presumably, was as light as hydrogen—existing in the corona of the sun together with hydrogen. Nothing more was known of it until, in this gas prepared from cleveite, this yellow line appeared and we could not be certain that it was helium until we had actually measured the wave-length of that particular line. Professor Ramsay took it up to Mr. Crookes that night, and on the Saturday morning Mr. Crookes measured it, and found it was almost, if not quite, identical with the line of helium, D_3; so that Professor Ramsay was able to telegraph over to the French chemist (Berthellot), saying he was coming over to give the lecture on argon, and that he had discovered another new element, helium, which he would bring over with him.

This element helium has a most magnificent, brilliant yellow spectrum; in fact, the spectrum of helium, and the colour it gives out when subjected to the electric discharge, are by far the most beautiful of any gas that I know; far more brilliant than hydrogen; far more brilliant than any ordinary gas; and if we examine it by means of the spectroscope it almost seems as if the whole of the most striking spectra had got mixed up together and put into one tube. There is a beautiful red line, which is as brilliant as the best red line in the hydrogen; there is a magnificent, intensely bright yellow line; and moreover, there are green, blue, and purple ones. All these lines exist in the helium in the most wonderful manner. If you look at it through a spectroscope you see a most magnificent spectrum.

There is but little more time to tell you about these gases; that is, about their general properties, and I have also not told you about the preparation of argon by Cavendish, but that will not take very long. What he did was this. He actually absorbed all the nitrogen by means of sparking, and I have here a diagram of the apparatus he used. It is perfectly marvellous tha he was able to carry out the experiment with a couple of wine-glasses, a bent tube and some potash lees, and an ordinary electric machine, and that was all Cavendish had when he produced argon. He took the nitrogen and put it into the bent tube above mercury; he then introduced, by means of a pipette, certain quantities of oxygen and sparked them with a wire introduced here from an ordinary electrical machine. In that way he was able to get the very feeble electric spark which could be obtained from the electrical machine of those days to pass from the level in one tube of gas down to the liquor in the other tube. Then he added more oxygen and more nitrogen, and went on thus keeping the machine going for about two months, probably for twelve hours a day, and was able to get the gas absorbed slowly; and, lastly, by a little liver of sulphur in this tube he absorbed the last traces of oxygen, and there was a minute bubble of gas left, and so accurate had he been with his measurements that he said: "After I had done this there was left a small bubble, but whether that was due to another constituent of the atmospheric air or not I was not able to say. At any rate," he said, "if this is a new

constituent of the atmosphere, it is only present in the proportion of the 1/120th part of the original atmosphere that I took." He was very nearly correct; it is a little over 1/100th, about 1 per cent. of the atmosphere is argon, and Cavendish said it could not be more than 1/120th. If Cavendish had been able to use such electric apparatus as we have nowadays, and such tubes as we have, that gas would have given all the spectra we now get from argon. But spectroscopy was not invented until about eighty years later, by Bunsen and Kirchoff.

This diagram shows the apparatus used for the liquefaction of argon. Some argon was sent to a Polish Professor, Olszewski, who has worked on the liquefaction of gases. He, by surrounding a tube filled with argon with liquid oxygen made to boil in a vacuum, succeeded not only in liquefying but in solidifying argon. Argon boils at $-187°{\cdot}0$ C., and becomes solid at $-189°{\cdot}6$ C.

This table shows the boiling points of different gases, $-246°$ C. is the temperature at which hydrogen boils; nitrogen $-194°$ C. Helium is not given here because it was not discovered when this table was prepared, and helium is the only gas which up to the present has not been liquefied. The absolute zero temperature, below which theoretically nothing can be cooled—that is to say, the temperature at which we suppose any substance ceases to possess any heat at all, and, therefore, cannot lose any more heat—is $-273°$ C. Professor Olszewski has cooled helium by boiling liquid hydrogen down to $-266°$ or $-267°$, within a few degrees of absolute zero, and yet has not liquefied it, even under pressure, and therefore it probably will not be liquefied.

Just one word in conclusion about the discovery of these gases. I mentioned at the beginning that no discovery is made except by hard work, and that no discovery is made suddenly. The whole of our knowledge about argon and helium came from hard work, and it came step by step, one thing led to another. No one would ever have thought of looking at cleveite as a mineral from which helium might be discovered unless first of all argon had been discovered, and no one would have thought of argon unless Lord Rayleigh, by accurate work, had found that the nitrogen that came from air was a little too heavy. He would not have done that unless he had been instigated to perform some rather more accurate scientific work than had been done by others; he merely repeated other people's work on the density of gases, because he wished to get more accurate determinations, in order that from those data other data might be obtained.

I think that probably the discovery of argon and helium, although at present they are of no commercial use—and I may say that people often ask me what is the use of argon and helium, but as it is difficult to answer such questions I do not try—from a scientific point of view, helium probably will be of the very greatest use. It is a gas which has the most peculiar properties. It is a gas which we call monatomic—that is to say, its atoms are the same as its molecules; the molecule and the atom are identical. Again, the electric conductivity of helium is very much greater at ordinary pressure than that of any other gas that is known. (Several experiments were here shown to prove this, the electric spark traversing a helium tube in preference to one of air or hydrogen, or passing through a longer distance.) Helium is ten times as good a conductor of electricity as ordinary air. Hydrogen up to the discovery of helium was the best conductor, but it is inferior to helium. Another curious point about it is that it is extremely light, and diffuses through a porous septum much more rapidly than it has any business to do. It diffuses in a perfectly abnormal way. Therefore I think this gas ought to be very useful to the physicists. They often talk about a perfect gas, and now I think they have it, and I hope they will be able to make something out of it. Chemists have done much with it, and now it is the turn of the physicists.

I have now taken up enough of your time, and hope I have been able to make myself sufficiently plain, and that you now know a little about the discovery of these two gases argon and helium.

NOTES ON THE USES OF DRUGS.

(*Continued from page* 340.)

Drugs Acting on the Intestinal Canal.

Anthelmintics are drugs used to kill or expel worms. Those used for killing are called vermicides, those used for expelling are called vermifuges. Tapeworms are long worms reaching a length of six to twelve feet, tape-like in shape and inhabiting the bowel; they consist of several segments. So long as the head remains in the body of man the growth of the worm continues.

Several drugs have been recommended for killing tape-worms; they are extract of male fern, pomegranate, kousso, kamala, and turpentine. Extract of male fern is by far the most efficacious. It is taken after a few hours' fasting, and should be followed by a dose of castor oil to expel the worm. Pomegranate is prepared in the form of a decoction, of which a couple of ounces is taken. Tannate of pelletierine is extracted from pomegranate root, and may be used in doses of 20 grains. Kousso is an old Abyssinian remedy, about half a pint of the unstrained infusion must be taken to kill a tape-worm. It has a nauseating, unpleasant taste, which must be nearly as bad for the man as for the worm.

Kamala consists of the hairs and glands on the surface of the fruit of an Indian plant. About two drachms are taken in powder and are efficacious. Turpentine sometimes acts well given in emulsion with mucilage of acacia.

Round worms are similar in shape to the common earthworm, and sometimes they wander all over the inside of the intestine, finding their way into the stomach or even the mouth of their host.

Santonin has been introduced into the Pharmacopœia as a vermicide for these animals, and is very useful. The drug is given at night-time, in doses of two or three grains, in an emulsion containing castor oil. It makes the urine very dark coloured, and often causes yellow vision, so that everything the person sees looks yellow. The thread-worm inhabits the rectum, and as its name implies, is a thin thread-like animal not longer than one inch. The thread-worm is found most commonly in children and causes rectal irritation, and possibly general malaise and picking of the nose. The worm is best removed by local applications, as by injections of decoction of quassia The vermifuges include such drugs as castor oil, jalap, scammony, and other purgatives.

Drugs Acting on the Liver and Pancreas.

The liver and pancreas supply by their secretions the ferments necessary for digestion in the duodenum. Drugs do not influence the liver or pancreas nearly as much as they do the stomach.

The cholagogues previously mentioned, mercury and podophyllin, stimulate a flow of bile, and consequently help to clear out the duodenum and facilitate digestion there.

Dilute nitrohydrochloric acid is a useful tonic for the liver of Indian generals.

There is an official preparation of ox-gall, fel bovinum purificatum; this is given in pills to those who suffer from obstruction of the bile duct, so that no bile can reach the duodenum, and it replaces the natural bile.

Ox-gall is also used in the treatment of duodenal dyspepsia.

The pancreas, unfortunately, so far as is known at present, is outside the influence of drugs.

Pancreatin is a preparation containing the active ferments of the pancreatic juice. As these ferments only act in an alkaline medium, the pancreatin is coated with keratin, so that it passes unchanged through the stomach, whose contents are acid, and is only set free when it reaches the duodenum.

Drugs Acting on the Nervous System.

The nervous system in man consists of the brain, the spinal cord, motor nerves which go from the spinal cord to the muscles, and sensory nerves, which convey sensations from the skin to the spinal cord. The brain of man is the seat of his intelligence, here all thought and volition are concentrated, here sensations are received. The brain contains areas, known as motor centres, through which orders for movements pass; when these centres are artificially stimulated movements take place. Sensory centres in brain receive sensations of pain, touch, and so on, and there are also special centres of sight and hearing.

In addition, the brain contains a centre which regulates the size of blood vessels, known as the vasomotor centre, another which is concerned with our breathing and is known as the respiratory centre, and so on.

Will power having been exercised, impulses are conveyed along the spinal cord to the motor nerves, and thus to the muscles. The spinal cord has other functions besides acting, so to speak, as the main railway rails from brain to nerves; it also has, metaphorically speaking, all along its line stations, where there is transference from the sensory to the motor branches. For instance, if a frog be taken and its brain removed, there are only left the spinal cord with its motor and sensory nerves. Suppose someone were to pinch the frog's foot, the foot would be immediately withdrawn. The impulse started by the pinch has run along the sensory nerve and has reached the spinal cord; from here it has been deflected down the motor nerve and caused the movement of the foot. This is known as reflex action. The spinal cord has centres controlling micturition, defæcation, and so on. The sensory nerves branch out into numerous ramifications, and are supplied to the skin, and thus can convey impressions of heat, touch, pain, from the whole of the body along the spinal cord to the brain. This introduction is necessary in order to understand the action of drugs on the nervous system.

Drugs which increase the activity of the brain are known as *cerebral stimulants*. The group includes alcohol, nux vomica, and strychnine, caffeine, and guarana.

The stimulating effects of alcohol were known to the ancients. All savages in different parts of the world have discovered some form of alcoholic drink. In medicine alcohol is applied locally to the skin, and is taken also internally. Applied to the skin, it makes the surface red and promotes absorption. Tincture of arnica applied to bruises derives all its value from the alcohol it contains. Alcohol is an excellent antiseptic, preservative, and extractive. Its antiseptic and preservative property depends upon the power of checking the growth of bacilli of fermentation and putrefaction, even when diluted. Concentrated alcohol preserves tissues by extracting the water from them. The Pharmacopœia contains several tinctures, because alcohol extracts the active principles from plants. I need not say much of the stimulating action of alcohol on the brain, in moderate doses it produces a feeling of *bien être*, then follows exhilaration and volubility, larger doses produce drowsiness, then unconsciousness, and finally death.

Alcohol in moderation increases the frequency and strength of the heart beats, it makes breathing more rapid and vigorous, it restores and revives a fainting person. Small quantities of spirit, if not too concentrated, assist digestion; constant nipping or drinking to excess causes chronic indigestion, among other evils. The kidneys pass more urine after alcohol has been taken; constant taking of alcohol causes chronic disease of kidneys. The body temperature, either in health or in fevers, is reduced by alcohol. The popular idea that a nip of whisky or brandy warms one up is a fallacy. A person feels warmer after taking brandy or whisky because it makes the blood vessels in the skin dilate, which is condition occurring when one is warm and associated in one's mind with warmth; nevertheless, a drop of alcohol wards off a chill.

The effect of alcohol on nutrition is well marked. People who habitually take large quantities of diluted alcohol, such as brewers draymen, grow very fat. Alcohol gets used up by the body and prevents tissue waste, therefore it is given in fevers, partly because it is a stimulant, and partly because it takes the place of food and prevents wasting of the body.

Large quantities of alcohol can be taken during fevers without producing intoxication. Alcohol must not be abused as a drug; given too often it produces a craving, which is very difficult to satisfy, and the alcohol habit demoralises the mind, lowers the respiratory activity, weakens the heart, reduces the power of doing work, and causes many chronic diseases. Strychnine and nux vomica are both cerebral stimulants, but as they act even more energetically on the spinal cord than on the brain, they will be considered later.

Caffeine is the alkaloid found in tea and coffee, and it is the principle of the "cup that cheers, but does not inebriate." Its stimulating effect is not followed, like that of alcohol, by depression. Caffeine is a powerful drug, and is frequently used to relieve headache, it stimulates the heart, and increases the amount of urine passed. In excess, caffeine causes palpitation of the heart, muscular twitchings, general nervousness, and diarrhœa.

Guarana, or Brazilian cocoa, contains an alkaloid similar to caffeine, and is used chiefly to cure megrim or sick headache. It is noticeable that all over the world people drink either alcohol in some form, or caffeine in the form of tea, coffee, or cocoa. Both in moderate amounts are stimulants, but alcohol in excess intoxicates and depresses the vital functions, while tea or coffee in excess causes debility, sleeplessness, and general nervousness.

Cerebral Depressants consist of anæsthetics, narcotics, and hypnotics.

(*To be continued.*)

NOTES AND FORMULÆ.

Syrup of Calcium Glycerophosphate.

Glycerophosphate of calcium, 10; citric acid, 1; distilled water, 340; loaf sugar, 610 parts. Dissolve cold by shaking. A tablespoonful for a dose three times a day.

Pastilles of Calcium Glycerophosphate.

Glycerophosphate of calcium, 10 to 15 centigrammes; cacao butter, 10 centigrammes. For one pastille. One such to be taken four times daily.—*Nouv. Rem.*, xii., 501, after *Pharm. Zeit.*

Glove Cleanser.

White Castile soap, 100; dissolved with gentle heat in water, 30; then add sodium hyposulphite, 30; liquid ammonia, 10. Mix.

Permanent Pills of Deliquescent Iodides.

Durgk finds that the following gives a good mass, easy to manipulate, setting to elegant pills, which are permanent in the air and easily dissolved in the stomach. Finely powdered potassium iodide, 10 centigrammes; powdered benzoin or olibanum, 3 centigrammes. Mix and add sufficient alcohol to mass.—*Bull. de la Soc. Roy. de Pharm.*, xl., 186.

THE ORIGIN OF PHARMACY.*

Though this work is not new, the amount of attention that is being devoted at the present time to the early history and development of pharmacy as a separate profession is sufficient to justify somewhat detailed reference to its contents. The German original was the outcome of the author's studies in the Germanic Museum at Nuremburg, but the revision undergone during the process of translation resulted in the incorporation of several features "of especial interest to English-speaking pharmacists and physicians."

The plan adopted in the book is to commence with a statement concerning the common origin of pharmacy and medicine, then sketch the relation of various tutelar deities and patron saints with the related crafts, and afterwards trace the development of pharmacy through the Middle Ages and down to the eighteenth century. Subsequently follow chapters on distilling apparatus, early chemico-pharmaceutical stoves and fireplaces, ancient pharmacopœias, medical superstitions, pharmacy and the art of love, and finally alchemy.

It is assumed that pharmacy, medicine, and most religions originated on the double basis of empiricism and a fanciful fetichtic philosophy, which recognised a "soul" in even inanimate objects. For a long period religious incantations occupied a chief place in the treatment of disease, as witness some of the ancient Assyrian cuneiform inscriptions; again, pharmacy was practised by one branch of the priest-hood of Isis, to whom prescriptions were sent by the physician-priest; and the Aryan races had similar usages to that of the Assyrians, with regard to the commingling of pharmacy, medicine, and religion, whilst these Aryan views in a corrupted form constituted the basis of Chinese pharmacy and pathology.

As every properly-educated schoolboy knows—but alas, not every British pharmacist—sickness and suffering came into the world owing to the indiscretion and susceptibility to feminine attractiveness of Prometheus, the first inventor, who as a punishment suffered from liver complaint ever after. The god Æsculapius, however, took pity upon suffering man, and profiting by the instruction of the Centaur Chiron, developed the art of healing to a high pitch, but was destroyed for presumptuously restoring the dead to life. His wife or daughter Hygeia, following in his footsteps, was regarded as the patron saint of health, and the serpent wound round a rod—a symbol borrowed from the Egyptian serpent worship, with which Moses and the Hebrews were on one notable occasion associated—became inseparately associated with Æsculapius and Hygeia, the principle of life and health having been early represented as a serpent.

Pharmacy, medicine, and surgery are represented as sub-divisions of the art of healing in a copper-plate dating from the sixteenth century, but long prior to this pharmacy had become more or less specialised. The Hebrews imbibed a taste for pharmaceutical studies from the Egyptians and Assyrians; the Cushito-Aryans were acquainted with an extensive materia medica, a knowledge of which they imparted to the Chinese; the Greeks developed the art in a more direct line, and at length Greek and Egyptian pharmacy and medicine commingled at Alexandria under the Ptolemies (323–30 B.C.). Herophilos, Serapion, Mantias, Herakleides, Hippocrates, Appollonios, Dioscorides, Erasistratos, Kleophantos, Nikandros, Kratenos, and Heras are amongst the names of those who early advanced the study of pharmacy and allied subjects, whilst following these came the Græco-Roman School and the rise of the Saracenic power, under which the various schools became united.

How Arabian pharmacy developed during the Middle Ages, and attained a permanent status in Spain and Italy; how the history of pharmacy in Germany commenced in the thirteenth century; and how the art gradually became definitely recognised throughout Europe is too long a tale to repeat here. Readers who are interested in the matter must therefore be referred to Peters' excellent account which, with its multitude of quaint and valuable illustrations, should prove a joy for ever to all pharmacists who love to sink awhile the prosaic present amid the curious traditions and imperfect records of the past.

* Pictorial History of Ancient Pharmacy; with sketches of early Medical Practice. By Hermann Peters. Translated from the German, and revised, with numerous additions, by Dr. William Netter. Pp. 184. Chicago: G. P. Engelhard and Company.

THE REALITY OF FOREIGN COMPETITION,
FROM A PRACTICAL PHOTOGRAPHER'S POINT OF VIEW.

The statement recently made in these columns that the introduction of the Jena glass had effected a revolution in optical science elicited from a correspondent a protest and a contra-statement that prior to this time "we had lenses which none of the modern lenses could equal." Now the first important point is to fix the commercial introduction of this Jena glass, and in a paper—"Ueber Glasschmielzerei für Optische und Andere Wissenschaftliche Zwecke," read at the Verein zür Beförderung des Gewerbfleisses, at Berlin, June 4, 1888, by Dr. S. Czapski—the following passage occurs:—"By the autumn of 1884 we were in a position to commence the wholesale production of optical glass, both of the old and new varieties." Having determined this point, it now becomes possible to examine the statement of our correspondent, mentioned above.

The photographic lenses in use up to the period referred to may be divided into three main groups—the portrait, the doublet, and the single or landscape lens. The first may at once be dismissed as having been unaltered, except in minor particulars, since its first introduction by Petzval in 1841, and the same may be said of the single or landscape lens since the improvement on Daguerre's form made by Français, Grubb, and Dallmeyer. The only form of lens in which a real advance was made was the doublet or rectilinear, first suggested by Steinheil, a German optician, in 1866, and upon this every other form of doublet has been based. In 1878, Voigtländer introduced the euryscope form of lens, that is a doublet, the working aperture of which was F/6, that is one-sixth of the focus. Hitherto the aperture had been F/8, and therefore this euryscope lens may be regarded as the type of the most advanced lens up to that time, and up to 1881, when it was beaten by the antiplanat of Steinheil, which worked at a slightly larger aperture.

Search as one will through English periodicals one finds but little on the Jena glass, except in the volumes of the Proceedings of the Royal Microscopical Society; but in the 'International Annual of Photography' for 1889, p. 167, occurs the following passage from the pen of Dr. Miethe, one of the most renowned of the latter-day German opticians:—

"The chief object to be obtained was the removal or diminution of the secondary colour aberration; at the same time the successful attempt was made to vary the optical qualities of the glasses by introducing into them new elements. The relation between the refraction index and the dispersion which previously in almost all cases had been a linear function of the first constant, was principally kept in mind, and glasses were produced which showed with almost the same refractive index very different dispersions. By this means it is possible to correct spherical aberration in the construction of telescopic and microscopic objectives in large measure, independently of chromatic errors, and in general to satisfy one more condition than formerly in the construction of optical lenses."

Mr. Conrad Beck, of the well known firm of opticians R. and J. Beck and Co., of Cornhill, says, in the *British Journal Almanac*, 1890, p. 495:—

"It is not always appreciated that the advantages of the new glass largely depend upon the fact that whereas previously we had some dozen or so different kinds of glass, all more or less similar in their refracting qualities, differing chiefly in degree of refraction, we have now offered to us by the Jena glass factory some ninety kinds of glass, all possessing different refracting powers, and some of which have entirely new qualities. Thus we have a much larger choice from which to make our lens combinations, and a greater scope for producing lenses of an altogether original type. It will be a long time before the subject has been entirely worked out, and until all the possible combinations have been either tried experimentally or calculated, it is impossible to say what may not be accomplished. . . . The main difference to be found between the old and the new glasses is this—whereas in the old glasses the dispersion increased in ratio to the increase of the refractive index, with the new glasses we have a constant index of refraction and varying degrees of dispersion or a constant dispersion with varying refraction."

Turning now to the practical application of the new glass, we shall find that in 1890 Carl Zeiss introduced his famous anastigmats, of which two were essentially new in principle. Since then have been introduced Goerz's anastigmat, Ross' concentric, Taylor's Cooke lens, Wray's platystigmat, all of which present features which were absolutely unknown before, and are such as it would be absolutely impossible to make without the Jena glass. That finality has not been reached in lens construction every careful observer must admit, but the above lenses at least are infinitely superior to any of the older types of lenses in their freedom from spherical aberration, astigmatism, flatness of field, and covering power at a large aperture, accompanied, moreover, with absence of the secondary spectrum.

Possibly the most striking novelty in construction is the Ross concentric lens, which is a doublet composed of two meniscus lenses, as all the older types were, but with this difference—that the concentric is composed of meniscus lenses which are actually thinner in the middle than at the edges, and are, therefore, concave, but have a "positive" focus, a feat which it would be impossible to have accomplished with the old glasses.

In microscope objectives, too, a complete revolution has been effected, and as the practical result of the introduction of these glasses may be indicated to the apochromats of Zeiss, Powell and Lealand, Reichert, Leitz, etc., in which the secondary spectrum has been totally eliminated and only a negligible tertiary spectrum remains, that is to say, the objectives are now corrected for three spectrum rays and not two, as in the older types, and only those who go in for resolving the finest diatom markings and the photomicrography of bacilli know how important this is.

So much for the optical side of the question. If attention be turned to chemicals, what do we find? Whence comes the whole of the pyrogallic acid used in photography, and what about hydroquinone? Do patents for amidol, metol, and glycine belong to an English or a German firm? Who is the maker of Saxe paper, and is not most of the raw paper used in photography of German make? Even in such minor matters as chemical apparatus used by photographers, thermometer glass, balances, etc., a careful study of any wholesale catalogue will prove that the majority of the same is of German make.

ARSENIC AS A PROPHYLACTIC IN SCARLATINA.—The remarkable protective and prophylactic action of arsenic against scarlatina has been confirmed by Sperawsky. Twelve individuals were treated, all being children who were in contact with cases of scarlatina; not a single case contracted the disease, although none were isolated from the infected cases. In addition to these, the author treated two cases of the disease with arsenic, and in one of these the patient was able to resume his work within a week.—*Rev. de Therap.*, lxiii., 625.

PHARMACY ACT, 1868.

RECTIFICATION OF THE REGISTERS OF PHARMACEUTICAL CHEMISTS AND CHEMISTS AND DRUGGISTS.*

We are requested by the Registrar to publish the following list of persons whose names will be erased from the Registers unless they communicate with him on or before December 30 next:—

Those marked (*) are Pharmaceutical Chemists.

Abbot, Joseph	98, Queen Street, Exeter.
Adcock, Robert McIntosh	10, Trinity Square, Borough, London, S.E.
Aitken, John Boreland	26, Hutcheson Square, Glasgow.
Allan, William	Newseat of Tillymorgan, Culsalmond, Aberdeenshire.
Andrewes, Henry Manning	16, Bridge Road, East Molesey.
Anstey, Thomas	4, Augusta Place, Lyncombe Hill, Bath.
Aplin, Albert Edward	41, London Street, Reading.
*Ashmead, John Stubbings	28, Stirling Road, Edgbaston, Birmingham.
Aspinall, James	16, Market Street, Whitworth, Lancs.
Atkinson, Charles Henry	Market Place, Heckmondwike.
Atkinson, Samuel	Heckmondwike, Yorks.
Ayre, William Sharp	Marlborough Street, Seaham Harbour.
Bache, Joseph	High Street, Pensnett, Staffordshire.
Bailye, William Richard	High Street, Wem, Salop.
Banbury, William Walter	Parsonage Street, Dursley, Glos.
Barber, Frederick Henry	110, Moor Street, Birmingham.
Barratt, George Frederick	47, Monkwell Street, Falcon Square, London, E.C.
Barry, Frederic	54, Stoke Newington Road, London, N.E.
Bascombe, William	29, Christ Church Road, Oxton, Birkenhead.
*Baylis, William	Launceston, Tasmania.
Baynton, Charles Summers	620, Coventry Road, Small Heath, Birmingham.
Beath, John	6, Roseneath Terrace, Edinburgh.
Beattie, James Brown	1, Whitehall Street Dundee.
Bellwood, John	335, Grays Inn Road, London, W.C.
Bignold, Walter	9, Weston Terrace, Green Lanes, London, N.
Birse, William	Three Laws of Craig, Hillside, Montrose, N.B.
Bishop, Henry	129, High Street, Kingsland, London, N.E.
*Blakeley, Leonard	3, Oats Street, Manchester.
Bolton, Edgar Benjamin	8, Upper High Street, Winchester.
Booth, Frank	Warsop Park, Shirebrook, Mansfields, Notts.
Booth, Jonathan	29, Paradise Street, Liverpool.
*Botham, William	7, Lynn Street, West Hartlepool.
Bowman, George Fell	73, Hunslet Road, Hunslet, Leeds.
Bowman, Jane M.	Carluke, Lanarkshire.
Bradford, James	1, Appin Terrace, Edinburgh.
Brewer, Daniel Tremlett	Moretonhampstead, Devon.
Bridges, Ernest Claude Tenney	Hazlebank, Kingswear, Devon.
Brierley, Joseph	Burton-upon-Trent.
Broadbent, William Henry	37, Downing Street, Manchester.
Broadhurst, Henry	20, Jordan Gate, Macclesfield.
Broughton, Thomas	Ecclesbill, Yorks.
Brown, James	Sanquhar, Dumfriessbire.
Brown, Richard Moss	105, Waterloo Street, Burton on-Trent.
Brunton, William David	36, Lady Menzie's Place, Edinburgh.
Burrell, John Benjamin	8, Selhurst Road, S. Norwood, London, S.E.
Burt, Cyril Cecil Barrow	76, York Street, Westminster, London, S.W.
Burt, George Edward	76, York Street, Westminster, London, S.W.
Bush, William	180, Barnsbury Road, Islington, London, N.
*Carswell, Thomas Retson	93, Morrison Street, Edinburgh.
Carter, James Charles	1, The Broadway, Ilford.
Castell, George Bayliss	393, High Street, Chatham.
Cave, George Edwin Osborne	67, Corrance Rd., Acre Lane, Brixton, London, S.W.
Chadwick, James	St. Helens, Lancs.
Cheers, Robert Salmon	1, Waterloo Road, Waterloo, Liverpool.
Child, Henry	246, Commercial Road, Peckham, London, S.E.
Christie, George	5, West Montgomery Place, Edinburgh.
Clatworthy, Seymour W.	97, Falkner Street, Gloucester.
Clay, Arthur	58, Blessington Road, Liverpool.
Clayton, George	315, Regent Street, London, W.
Cockshott, William Arthur	Market Place, Hyde, Cheshire.
Colenutt, Frederick Moreton	1, Alexandra Terrace, Shanklin.

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* EXTRACT FROM THE "PHARMACY ACT," 31 AND 32 VICTORIA, CAP. 121.

Section X.—"It shall be the duty of the Registrar to make and keep a correct Register, in accordance with the provisions of this Act, of all persons who shall be entitled to be registered under this Act, and to erase the names of all registered persons who shall have died, and from time to time make the necessary alterations in the addresses of the persons registered under this Act; to enable the Registrar duly to fulfil the duties imposed upon him, it shall be lawful for the Registrar to write a letter to any registered person, addressed to him according to his address on the Register, to inquire whether he has ceased to carry on business or has changed his residence,—such letter to be forwarded by post as a registered letter according to the Post Office regulations for the time being; and if no answer shall be returned to such letter within the period of six months from the sending of the letter, a second, of similar purport, shall be sent in like manner; and if no answer be given thereto within three months from the date thereof, it shall be lawful to erase the name of such person from the Register, provided always that the same may be restored by direction of the Council of the Pharmaceutical Society, should they think fit to make an order to that effect."

Cooper, Alfred	Etwall, Derbyshire.
Cooper, Helen	9, Pleydell Street, London, E.C.
*Cooper, Henry	15, Bartholomew Street, Leicester.
Cooper, Thomas	Etwall, Derbyshire.
Couper, Charles James	Brocklands, Canterbury.
Court, Alfred	218, Kentish Town Road, London, N.W.
Cowgill, Benjamin Rangdale	77, Erlington Road, Bradford, Yorks.
*Cowie, George	Royal Infirmary, Aberdeen.
Cox, Homersham Edward	137, Elm Grove, Brighton.
Cumber, William Thomas	6, County Place, Totterdown, Bristol.
Cutforth, John Dixon	5, Cumberland Street, Pimlico, London, S.W.
Cutts, Joseph Nix	2, Park Villas, Teddington.
Dale, Alfred	28, North Street, Scarborough.
Davey, Albion	70, Gloucester Road, Peckham, London, S.E.
Dawson, Edwin	19, Wigmore Street, London, W.
Dewes, George	163, Bloomsbury, Birmingham
Dilcock, Thomas	Whitfield Lane, Liverpool.
Dixon, James	187, Boundary Road, St. Helens, Lancs.
Doe, Walter James	9, Upper Market Place, Leyton.
Douglas, James Palliser	99, East Street, Southampton.
Dutton, William	Bolsover, Chesterfield.
Easson, Robert	113, Buchanan Street, Glasgow.
Edwards, Francis William	98, Westbourne Park Road, London, W.
Elliott, Frank Launcelot	35, Myddleton Square, London, E.C.
Evans, Harry	16, Methley St., Kennington Cross, London, S.E.
Evans, Robert Frederic	75, Aldersgate Street, London, E.C.
Fairburn, Thomas White	38, Jeffreys Road, Clapham, London, S.W
Fisher, John Little	139, Upper Kennington Lane, London, S.E.
Flanagan, William James	6, Clonbrook Road, Stoke Newington, London, N.
Flynn, William	94, Botchergate, Carlisle.
Foster, Alfred	Church Gate, East Retford, Notts.
Francis, Matthew Robert	62, Canton Street, Poplar, London, E.
Gale, William Gillam	88, Hoe Street, Walthamstow.
Gaster, Henry	26, Guildford Road, Bromley, London, E.
George, Frederick Benjamin	Calne, Wilts.
Gibson, Atkin Brewster	71, High Street, Grantham.
Gill, George	Chapel Lane, Bingley, Yorks.
Gill, Richard Turton	7, Belgrave Terrace, Pinderfield, Wakefield.
Gordon, Alexander	155, North Hill Street, Princes Park, Liverpool.
Gould, Charles William	611, High Road, Chiswick.
Goulden, Henry William	24, Ladywell Park, Lewisham, S.E.
Graham, Thomas	Corn Market, Penrith, Cumberland.
Graves, Joseph Waddington	Sandwich.
Greenway, Richard H.	46, Stafford Street, Birmingham.
Greville, Charles Brooke	The Grange, Coventry Road, Birmingham.
Griffin, William John	Southend, Ledbury.
*Groves, Thomas	273, Regent Street, London, W.
Hamilton, Robert	23, Meadowbank Street, Lower Windsor, Belfast.
Hamlin, Charles Booth	4, The Broadway, Lower Mitcham.
Hanna, George Henry	506, Holloway Road, London, N.
Harrington, Richard Beaumont	161, Denman St., Radford Boulevard, Nottingham.
Healey, Thomas	Beverley Road, Hull.
Heath, Frederick Devon	7, Heath Rise, Hampstead Heath, London, N.W.
Henderson, Christopher	Wibsey, near Bradford, Yorks
Henderson, Mary Jane	17, Murdoch Terrace, W. Fountainbridge, Edinburgh.
Henry, James	66, High Street, Annan.
Higson, John	72, Victoria Street, Blackburn, Lancs.
Hindman, John	5, Clydeview Terrace, Glasgow.
Holroyd, John Jackson	222, Kirkstall Road, Leeds.
Hookes, Robert Thomas	1, Colva Street, Dartmouth Park Hill, London, N.
Hughes, John Edward	9, South Street, South Cliff, Scarborough.
Hunt, Charles	12, St. Paul's Street, Worcester.
Hunter, Archibald G. Crosby	39, Weymouth Street, Oxford Road, Manchester.
Hunter, John	3, Caledonian Street, Paisley.
Hurcomb, Lawrence E.	Church Drive, Carrington, Nottingham.
Jago, Charles Albert	45, Court Hill Road, Lewisham, London, S.E.
Jeffrey, Edwin Basset	34, Revardy Road, Blue Anchor Road, Bermondsey, London, S.E.
Jennings, Francis Rice	1, Wellington Terrace, Weymouth.
Jobson, Thomas C. W.	Victoria Grove, Southsea.
Jones, Alfred Benjamin George Ernest	50, Derby Road, West Croydon.
Jones, David	94, Broadway, Roath, Cardiff.
Jones, John Lloyd	Rhosllanerchrugog, near Ruabon.
Jones, Llewellyn Foulkes	Flint.
Joures, Robert	1, Morningside Terrace, Chester-le-Street.
Kaberry, William	Pateley Bridge, Yorks.
Kain, Joseph John	324, Stanstead Road, Catford, London, S.E.
Kershaw, James	105, Drake Street, Rochdale.
Key, Astley Cooper	Cold Harbour Lane, Camberwell, London, S.E.
King, William Bealby	5, Derringham Street, Hull.
Klosz, Sidney Albert	19, King's Road, Sloane Square, London, S.W.
Knight, John Eddy	56, Mildmay Road, Stoke Newington, London, N.
Lamb, Robert	Swan Hill, Court House, Shrewsbury.
Langford, William Henry	24, Lordship Lane, Tottenham.
Langridge, Thomas B.	218, Market Place, Dudley.
Law, James	Swanscombe.
Lawton, Thomas Hartley	Upper Wortley, near Leeds.
Lea, Leonard	Corn Market, Romsey, Hants.
Le Maout, Augustus	57, Princes Street, Leicester Square, London, W.
Leuty, Thomas William Chard	11, Thornton Avenue, Streatham Hill, London, S.W.
Levie, Thomas Joseph Pole	6, Gardner's Crescent, Edinburgh.
Lewis, David	4, The Broadway, Lower Mitcham.
Lewis, David William	Treddol, Glandovey, R.S.O., Cardiganshire.
Lewis, James	60, Woodville Road, Cardiff.
Lewis, Thomas Wright	73, Mansfield Road, Aston, Birmingham.
Lilley, John Henry	Selston, Notts.
Lissaman, Thomas	St. Batholomew's Hospital, London, E.C.
Loal, Henry Wells	37, Harmer Street, Gravesend.
Long, William	38, Potters Hill, Aston, Birmingham.
Lord, William Henry	245, Moseley Street, Birmingham.
Lowe, Alfred	Chesterfield.
Loxton, James Stoakes	1, Clarence Terrace, Wolsey Road, Teddington.
Lyle, William Kennedy	559, New City Road, Glasgow.
Lyne, Walter Henry	7, Shrewsbury Road, Redhill.
McAnarney, Peter	84, Abercromby Street, Glasgow.
McConnachie, George	63, Cumberland Street, Edinburgh.
McDonald, Marion	136, London Road, Glasgow.
McDougall, James	15, Essex Road, London, N.
McEwan, Archibald	52, James Orr Street, Glasgow.
MacGregor, John	Dunkeld Street, Aberfeldy, N.B.
Mackill, Robert Cathcart	56, Cadzow Street, Hamilton.
Madge, Hubert Abraham	Weston Cottage, Weston, near Honiton.
Maffey, John	Ringwood, Hants.
Marchbank, William	Cowling, near Crosshills, Yorks
Marshall, Charles Bushby	30, Claremont Road, Sandymount, Dublin.
Martin, James	6, Ure Place, Glasgow.
Mason, Alexander	15, Forrest Road, Edinburgh.
Mason, Thomas	Chapel Hill, Glencarse, Perthshire.
Mill, Samuel Thomas	Higher Square, Holsworthy, Devon.
Millen, Herbert Alfred	9, Lordship Lane, East Dulwich, London, S.E.
Miller, Edward	26, Friars' Walk, Lewes, Sussex.
Miller, William Henry	Church Hill, Hednesford.
Milligan, William M.	14, Arthur Street, Newton Stewart, N.B.
Milne, Alexander	25, Fowler Terrace, Edinburgh.
Moore, Arthur	16, Western Street, Hove, Brighton.
Morris, Henry Ridley	21, Market Hill, Sudbury.
Morton, Henry	35, Miranda Road, Upper Holloway, London, N.
Murray, Alexander	21, Montague Street, Edinburgh.
Murray, William	9, Market Place, Wednesbury.
Mussell, Thomas	High Street, Ringwood, Hants.
Neil, Henry	61, Dalry Road, Edinburgh.
Ockenden, Oliver James	1, Grove Terrace, Notting Hill, London, W.
Owen, Charles Richard	28, Moscow Road, Bayswater, London, W.
Parkinson, Peter Robinson	Northgate Street, Blackburn, Lancs.
Paterson, Gavin	252, Buchanan Street, Glasgow.
Paterson, William	252, Buchanan Street, Glasgow.
Pearson, Edward	9, Market Street, Long Row, Nottingham.
Peat, Joseph	Church, near Accrington, Lancs.
*Pettwee, Frederick	Smyrna.
Petrie, John Stephen	Victoria Square, Lockerbie, N.B.
Phillips, Daniel	450, New Cross Road, London, S.E.
Pickering, Isaac	Bangor-is-y-Coed, Wrexham, Denbighshire.
Poate, Thomas Pratt	11, North Cross Street, Gosport.
Pool, George Andrew	29, Steven Street, Glasgow.
Porter, William Edward	Arboretum, Worcester.
Preece, Charles Godwin	Lulworth House, Keynsham, Somerset.
Price, Richard Cameron	9, New Street, Wellington, Salop.
Pridgeon, Henry Pacey	119, Roman Road, Victoria Park, London, N.E.
Proudfoot, William Henry	16, East Hendon Road, Sunderland.
Reay, John Robson	Middleton, West Hartlepool.
Rees, Richard	Aberdovey, Merionethshire.
Reid, James	1, Beck Street, Nottingham.
Reynolds, Thomas	Caerphilly, Glamorganshire.
*Richardson, William	53, Berkeley Street, Liverpool.
Richardson, William Jenkinson	Kirkby Lonsdale.
Rixon, John Bishop	55, Amhurst Road, Hackney, London, N.E.
Robertson, James	4, Braid Place, Edinburgh.
Robertson, James George	43, Morningside Road, Edinburgh.
Robinson, Bernard Christopher	183, Hall Street, Stockport.
Robinson, John James	104, Brunswick Street, Leamington.
Rodmell, John Gale	Highgate, Hawkhurst, Kent.
Rogers, George Edward	1, Chesnut Villas, Edmonton.
Rogers, James	35, Queen's Park Road, Brighton.
Roper, William Isaac	3, Methley Street, Kennington, London, S.E.
Roscoe, Sarah Agnes	West Hill, Heanor, Derbyshire.
Rotherham, Charles John	82, Grosvenor Street, London, W.
Royle, Edward	38, Prussia Street, Oldham Road, Manchester.
Rushton, William	57, Devonport Road, Shepherds Bush, London, W.
Russel, Thomas Gregory	Market Place, Whittlesea.
Russell, Charles Roberts	88, East Street, Walworth, London, S.E.
Sanderson, Henry	37, Hyde Grove, Manchester.
Sarjeant, Alfred	"Melrose," Durham Road, E. Finchley, London, N.
Savege, Ernest	50, Blanket Row, Hull.
Scholes, James Spencer	2, Duffield Road, Derby.
Sewell, Maurice	38, South Street, Exeter.
Sewell, William	The Lodge, Wadsley, near Sheffield.
Sewelson, David	117, Rochdale Road, Manchester.
Sharp, Edward Keighley	Marlborough Street, Leicester.
Sherwin, William Bakewell	18, Queen Street, Derby.
Shillito, William John	4, Monk Bar, York.
Shirtliff, Francis	Kingston-on-Thames.
Simmons, John Sheen	Thame, Oxon.
Simpson, Alex. Tweedie	New Delaval, Newsham, Northumberland.
Simpson, James	103, Talbot Road, Bayswater, London, W.
Skirving, Alexander	273, New City Road, Glasgow.
Smith, Nathan	Highbridge, Somerset.
Smith, Peter	Albert House, Appleton, Widnes.
Snow, William Jackson	College Road, Heigham Ferrers.
Snowball, Henry	1, Royalty Road, Bishopwearmouth, Sunderland.
Spink, Arthur Bowman	3, Marsham Street, Westminster, London, S.W.
Spink, Harry Laing	76, York Street, Westminster, London, S.W.
Squire, Frederick John Cripps	109, Stonefield Terrace, Hastings.
Stanton, Leonard William	5, Gower Street, London, W.C.
Stedman, Charles Richard	19, Oakley Square, Camden Town, London, N.W.
Stephens, George Thomas	50, Berry Street, Liverpool.
Stevenson, James	14, Basinghall Street, London, E.C.
Stott, Ernest Lucius	46, Green Street, Warrington.

Stubbins, Henry	51, Bridge Street, Br'ggs, Lincs.
Sutton, Henry	32, Sun Street, Finsbury Square, London, E.C.
Tebbs, Richard	Hyde Park Corner, Leeds.
Thom, Robert	113, Buchanan Street, Glasgow.
Thomas, Archibald	2, Burystead Place, Wellingbo ough.
Thomas, Ernest Loydwick	47, Pendre, Cardigan.
Thomas, Frederick	Bridge Street, Evesham.
Thompson, Alfonso deLamartine	Church Street, Haydon Bridge, Northumberland.
Thompson, Arthur	146, Upper Richmond Road, Putney, London, S.W.
Thomson, Archibald	Lockerbie, N.B.
Thorley, Walter	36, Roseberry Square, London, E.C.
Tipton, John	St. Georges, Wellington. Salop.
Todd, Joseph	64, London Road, Carli le.
Townsend, William Alfred	3, Landsdown Road, Stapleton Road, Bristol.
Trevaskis, George Marrack	1, Clifton Terrace, Newlyn, Penzance.
Turner, Ernest	12, Monnery Road, Junction Road, London, N.
Walker, Henry	518, King's Road, Chelsea, London, S.W.
Walker, Henry James	94, Harrow Road, London, W.
Wallis, Herbert Boyd	Orsett, near Romford, Essex.
Wallis, William Hobson	3, Postern Street, Nottingham.
Ward, John	36, Normanton Street, Derby.
Ward, Thomas	Higham Ferrers, Northamptonshire.
Warrington, Charles Bower	Sambrook Hall, Wem, Salop.
Watling, Arthur	Jacobus Building, Mont Clair, New Jersey, U.S A.
Watson, Alexander	Cambuslang, Glasgow.
Watts, Francis Wapshare	St Mary's Road, Portsmouth.
Webb, Frederick Brooks	Hazeldean, Chatfield Road, West Croydon.
Webster, Frederick Wm.	Whitstable, Kent.
Welsh, Thomas	78, Queen Street, Edinburgh.
Wheeler, Charles	Red Lion Street, Redditch, Worcestershire.
White, Samuel Banfield	8, Church Lane, Hendon.
Whitehead, John	132, Waterloo Road, Cheetham, Manchester.
Whitelam, Richard	Long Sutton.
Whiteside, Rebecca	67, North Street, Hull.
Whitewood, John	7, Croom's Hill, Greenwich London, S.E.
Williams, John Aldersea	New Chester Road, Bromborough.
Williams, Nathaniel	New Canal, Salisbury.
Williamson, John	Annan, Dumfriesshire.
Wilson, Richard Henry	33, Netherfield Road, Netherfield, Nottingham.
Wilson, Samuel King	38, Duke Street, Manchester Square, London, W.
Witherington, Thomas Jas	8, Foregate Street, Worcester.
Wokes, George	2, Carr Lane, Hull.
Wolstenholme, Alfred	94, Arundel Street, Sheffield.
Wolstenholme, John	Knowsley Street, Bury, Lancs.
Wolstenholme, John, jun.	Knowsley Street, Bury, Lancs.
Wood, David Moffat	34, Brunswick Ter., Grosvenor Park, London, S.E.
Wood, John	Studley, Warwickshire.
Wood, Thomas	7, Cheapside, Bolton, Lancs.
Woodhouse, William	10, Cleveland Square, Liverpool.
Woodstock, Chas. Edmund	Bradley Green, near Congleton.
Woodward, Edward	94, Varna Road, Edgbaston, Birmingham.
Wyatt, Thomas	2, Somerset Place, Gloucester.
Young, Dewar	Berkhamsted, Herts.

DOCTORS' BILLS IN THE OLDEN TIME.

Since closing the article on this subject, that appeared in the Journal of November 7 (page 398), a few more of Isaac Dobell's accounts have been found. The first—endorsed "Mr. Hayter at Bull Milkhouse"—is not remarkable for much, except the indication that emetics probably varied in price according to their strength. The price of "salts"—two shillings per pound—is enormous when we consider present-day charges and also reflect upon the much greater purchasing power of money a hundred years ago.

1782. Mr. Hayter, Dr. to Isaac Dobell.

		s.	d.
April 16.	To Journey to Do.	0	6
	To Bleeding Do.	1	0
	To Emetic to Do., Strong	1	0
17.	To Journey	0	6
	To Cathartic pills	1	0
May 20.	To lb.ss. of Salts	1	0
		5	0

The next specimen throws into greater relief than ever the comparatively low estimate formerly placed by medical practitioners upon personal attendance and the time occupied in visiting patients. Mr. Dunster, whose name heads the account, lived at Stone, presumably Stone in Oxney. This place is situated on the borders of Romney Marsh, about fifteen miles distant from Cranbrook, so the charge of seven shillings and sixpence does not appear excessive for a journey of thirty miles, with medical attendance and advice included.

1789. Mr. Dunster, Dr. to Isaac Dobell.

		s.	d.
May 24.	Journey to his son at Stone	7	6
	Emetic and Cathartic Mixt.	1	6
	Anody. Cord. Mixt.	1	6
	Embroca.	2	0
24.	Saline feb. Mixt.	2	0
	Anody. Cord. Mixt.	1	9
	Embroca.	1	6
June 7.	Do.	1	6
	Anody. Mixt.	1	6
19.	Journey	7	6
20.	Embroca.	1	9
	Saline feb. Mixt.	2	0
	Anody. Mixt.	1	6
July 5.	Embroca.	2	0
	Saline feb Mixt.	1	9
26.	Embroca. ℥x.	2	6
	Cort. Peruv. Mixt.	2	0
	Bottle of Oiles	1	6
Aug. 16.	Do.	1	6
	Tinct. Cort. Peruv. ℥viij.	2	6
Sept. 6.	Embroca.	2	0
	Large Plaster	1	0
		£2	10 3

Another Benenden resident is the debtor in the last case, the account covering a period of nearly three years. Most of the items seemed to have been supplied for Mr. George Wells' better half, who was in what is euphoniously termed an "interesting" condition. The result is clearly indicated by the last entry for 1799, the doctor having officiated on March 7 of that year as the agent of Juno Lucina. As for the charge in this instance, no paterfamilias can gainsay that it was extremely moderate. Indeed, with such a scale prevailing, the initial outlay attending an increase of family must have been amongst the least of the attendant evils in days of yore.

1798. Mr. George Wells, Benenden, Dr. to Isaac Dobell.

		s.	d.
August 8.	To ℥viij. Cort. Peru. Anody. to Mrs. Do.	2	0
	To Do. Saline Oily Embro.	2	0
December 24.	To ℥i. Anody. Mixture	1	0
1799.			
February 23.	To ℥i. Anody. Mixture	0	9
24.	To Do. Tincture	1	0
	To ℥viij. Saline Oily Mixt.	2	0
25.	To Journey	1	0
	To Volat. Anody. Tinct.	0	9
	To Castor Oil	1	6
March 7.	To Blister and Salve	1	6
	To ℥i. Volat. Anody. Em.	1	0
	To a Delivery	10	6
1800.			
January 30.	To ℥ii.ss. Cathartic Mixt.	1	0
February 1.	To Salts and Powder	0	6
		£1	6 6

According to one of his descendants, Isaac Dobell died in 1801 so that the account of Mr. Lever, of Biddenden, referred to last week, must have been one of the last he made out. The particulars gleaned from those now published help to round off the impression formed of the nature of his practice, which must have been very general in its scope, regarded as a whole. As a good general practitioner, however, he was typical of a most useful class, now fast disappearing. But, having thus temporarily rescued his name from oblivion, here we must finally leave him.

CALCIUM PERMANGANATE IN DENTAL SURGERY.—As a powerful and at the same time harmless disinfectant, d'Almen considers that calcium permanganate holds an important place in dental surgery, particularly as affording a means of obtaining perfect antisepsis, both before and after operation. Employed as a gargle in 2 per cent. solution, it is most serviceable after extensive operations in the buccal cavity.—*Rev. Intern. de Méd. et de Chirurg.*, vii., 319, after *L'Odontol.*

A PHARMACOPŒIA FOR INDIA.

BY D. HOOPER, F.C.S., F.I.C., F.L.S.

Nearly every civilised nation has its authoritative formulary or receipt book in which the official drugs and chemicals are described and their preparations ordered to be made up to a uniform standard. Such a work is absolutely necessary for dealers in medicines to enable them to recognise genuine drugs and to detect adulterations, and it is of the utmost consequence to manufacturers and dispensers to help them to prepare their articles according to some definite composition and strength. In such a country as India, which supplies the world with some of the most useful and potent medicaments, great care should be exercised in keeping their disposal under proper control, and in reducing the huge list of indigenous drugs to a systematic collection of those only whose properties have been submitted to therapeutic and physiological tests, and which have more than a local reputation. It is only by careful selection, based upon scientific experiments, that worthless remedies can be rejected, and the supply of drugs of real activity recommended to be increased by cultivation or other means.

The history of Pharmacopœias in India is not very complicated. In 1837, a committee assembled in Calcutta to discuss the question of adopting a classified list of substances of the materia medica and their preparations to meet the requirements of the Indian Medical Department. The result of this conference was the publication of the Bengal Pharmacopœia in the year 1844, under the editorship of Dr. W. B. O'Shaughnessy, the Professor of Chemistry at the Calcutta Medical College. This pharmacopœia was constructed upon the model of the Edinburgh Pharmacopœia of 1840, and prominence was given in it to a large number of drugs and chemicals common to the bazaars of Upper India. The British Pharmacopœia was published in 1864, followed by a corrected edition in 1867, which superseded those of London, Edinburgh, and Dublin, and lasted, as an authority in medicine, for eighteen years. The Pharmacopœia was "intended to afford to the members of the medical profession, and those engaged in the preparation of medicines throughout the British Empire one uniform standard and guide, whereby the nature and composition of substances to be used in medicine may be ascertained and determined."

Notwithstanding the aim and scope of the British Pharmacopœia of 1867, as set forth in the above extract from the preface, another attempt was made to produce a pharmacopœia specially for India. At the instance of the Secretary of State, a committee, consisting mainly of retired Indian medical officers, was called together in London, in 1865, and three years afterwards, under the editorial care of Dr. E. J. Waring, the Pharmacopœia of India made its appearance. This book was very carefully compiled. Several Indian drugs, not in the B.P., were for the first time made official, and non-official drugs were described, and substitutes for European medicines suggested. Some useful notes on the properties and therapeutic uses of all new remedies made it a text-book for the medical student, and imparted an educational character to the work. Besides this, it contained an appendix with numerous bibliographical notes and the latest reports on the materia medica, the whole of which rendered it interesting and reliable for purposes of reference for some years after its publication.

With all its good qualities, the Pharmacopœia of India was not received with much enthusiasm, and officers of the medical service coming out to India with an European education were conversant with the British Pharmacopœia, and found it convenient to adhere to it. Most of the indigenous drugs made official in 1868, were not used in general practice, and by some of the best doctors were not even recognised. In 1885, when a new edition of the British Pharmacopœia was issued, it was accepted by the medical profession and by chemists and druggists throughout the country as an authoritative hand-book for India. All drugs and pharmaceutical preparations used in the Medical Store Departments are required to be of "B.P. quality," and the medical colleges have made it their text-book, and the graduates have been taught their pharmacy from it. It is evident that the Indian Pharmacopœia soon became obsolete, and now after its twenty-seven years of existence, it only forms a landmark in the history of medical literature.

The issue of another pharmacopœia in Great Britain has been under consideration for nearly three years, and the authorities have almost decided to make it Imperial, and so modify it as to make it suitable for the British Colonies and the Empire of India. Uniformity in the strength of medicines in every country is to be commended, and although it is premature to formulate an Universal Pharmacopœia, the production of an Imperial one will be an advance in the right direction. The facility of communication between all parts of the world will make it convenient for India to obtain official remedies from the West if they cannot be procured in this land. Whatever new drug or chemical is likely to become official, it could be supplied in a few weeks and distributed all over the peninsula. India cannot compete with Europe in the manufacture of the finer chemicals used in medicine, but nearly all the vegetable drugs in the Pharmacopœia can be cultivated in suitable situations in this country, or their action can be very efficiently represented by substitutes. In the last British Pharmacopœia such well-known herbs as belladonna, conium, digitalis, dandelion, and hyoscyamus are ordered to be collected in Britain. If we are to adhere to the letter of the pharmaceutical law, the above-mentioned drugs would not be considered official, and the plants or their preparations would have to be imported from England. It is well known that the cultivated cinchona bark of India is superior to the old Peruvian bark used forty years ago, and that the cultivated jalap tubers and ipecacuanha root are just as efficacious as those received from Mexico and Brazil respectively. The question of the strength of other medicinal plants grown in different climates is one requiring investigation, and should be considered by the Indigenous Drug Committee, now sitting in Calcutta.

The Drug Committee should definitely recommend to the authorities on the General Medical Council in London the necessary substances to be included in the next pharmacopœia, and should suggest the best methods for adapting it to India. The committee will do good work in encouraging the cultivation of medicinal plants indigenous to India; but what is more required is the cultivation of drugs official in European pharmacopœias, the properties of which have been thoroughly investigated by modern physiologists. The drugs used at the medical depots need not all be official, provided that those of real value are substituted; picrorrhiza root is an excellent remedy, for instance, in the absence of gentian root. With regard to stable preparations of drugs, the fluid extract is one of the most convenient for experiment or hospital use. The strength should be of such a proportion that one fluid ounce of the extract presents one avoirdupois ounce of the drug.

There are so many subjects affecting the compilation of a pharmacopœia that it would be impossible to refer to them all in the course of a single article. A pharmacopœia cannot be framed only by medical men, and it requires the assistance of pharmacists, botanists, horticulturists, chemists and merchants. Let us hope that with the valuable help that is being accorded by the different professions to the editor of the Imperial Pharmacopœia, it will be the most perfect medicine book in the world, and loyally followed by the medical practitioners in India.—*Indian Pharmacologist.*

PHARMACEUTICAL JOURNAL.

A Weekly Record of Pharmacy and Allied Sciences.

ESTABLISHED 1841.

Circulating in the United Kingdom, France, Germany, Austria, Italy, Russia, Switzerland, Canada, the United States, South America, India, Australasia, South Africa, etc.

Editorial Office: 17, BLOOMSBURY SQUARE, W.C.

Publishing and Advertising Office: 5, SERLE STREET, W.C.

LONDON: SATURDAY, NOVEMBER 14, 1896.

IMPROVED MEANS OF LOCOMOTION.

The date of publication of this number of the *Pharmaceutical Journal* will be remembered in years to come as marking the beginning of a new era in methods of locomotion in this country. In all probability the changes that will be effected in a few years through the general introduction of ordinary road vehicles propelled by steam, petroleum, compressed gas, or electricity, instead of being drawn by horses, will be only slightly less important than the economic revolution due to the introduction of railways some seventy years ago. For the pioneer railway—the Stockton and Darlington line—was not opened for public traffic until September 27, 1896, though the interval of time that has since elapsed has sufficed to make the world a totally different place to live in. The bulk of the traffic has since been diverted from the highways to the iron roads, old post-houses and country inns have become the ghosts of their former selves, and once busy towns have been shorn of all but the recollection of their past glories. In some respects the increasing popularity of the bicycle has of late years tended to partially reverse this condition of things, but for conveying heavy goods cycles are, of course, quite out of the question, whilst travelling parties have had to make their choice between horse traction and the railway. It is worthy of note that the earliest railways were authorised on the assumption that they would be used by carriers, in the same way as canals, the regulations as to charges and classification of goods being based on those current on the principal waterways. Gradually, however, the railway companies have come to be regarded as carriers rather than simply proprietors of the means of communication.

But the needs of the times now require something more than railways with their fixed routes and practical monopoly as long-distance carriers. The question of mechanical traction on ordinary roads has therefore received attention for several years past. As a matter of fact, horseless carriages had been constructed before the existing railway system originated, but only within quite recent years have the more important practical difficulties been overcome. Inventors have been busy in Great Britain, on the Continent, and in America, and matters had at last progressed so far that it was found necessary a few months ago to pass a special Act of Parliament to remove the restrictions which have prevented the profitable employment of light locomotives on highways. The date on which the Locomotives on Highways Act, 1896, comes into force—Saturday, November 14—is to be signalised by a grand procession of motor cars, as the new vehicles are now generally termed. A large number of vehicles of many different makes and variously propelled will then proceed from London to Brighton, and a useful opportunity thus be afforded of judging their respective merits and demerits. Electricity will doubtless become the favourite motive power in the future, on account of the absence of heat, noise, and smell—to say nothing of risk from fire—which are all associated in greater or less degree with steam, gas, and oil motors The paucity of charging stations and the great weight of most of the accumulators at present in use will tend, however, to prevent this ideal force being utilised to any great extent for some time to come. Meanwhile, a profitable field is opened for inventors.

As it is, motor cars as a class are now on their trial, and special regulations have been published by the Local Government Board, which have the effect of limiting the speed that may be attained by such cars to twelve miles an hour. They must also be fully provided with lamps, bells, etc., be capable of travelling backwards in case of need, and not likely to cause a nuisance in any way. If used to draw other vehicles, the "locomotive" must not exceed a speed of five to eight miles per hour, according to the weight of the load. But these regulations are only tentative and will be revised in the light of fuller experience next year. For the present it suffices that the old prohibitive restrictions have been removed. Time will see any deficiencies in the regulations remedied, just as it may be depended upon to disclose solutions of the remaining difficulties that add to the initial outlay and working expenses of the new motor cars. It is not too much to anticipate that by the extension of the light railway system, and the general introduction of mechanical motors in place of horses, country districts will be opened out for trade and residential purposes as they never could have been by heavy railways. With the gradual disappearance of the horse from our streets too, the sanitary condition of towns will be immeasurably improved, and it is quite within the bounds of probability that the lapse of a very few years may see the world as different from what it now is, as at the present time it differs from what it was during the closing years of the reign of William IV.

THE EVENING MEETING.

The members, associates and students of the Pharmaceutical Society are to be congratulated on the heartiness of their welcome to Professor Collie on Tuesday evening, no less than on the excellence of the entertainment provided for their delectation. Before a large and most enthusiastic audience an excellent lecture was delivered on a most fascinating subject, and the practical manner in which that subject was handled augurs well for the prospects of the School of Pharmacy on the teaching side. Detailed reference to the points of the lecture would be superfluous, for it is reported in full in our pages this week, but whilst reproducing the matter it is impossible through the medium of cold type to reproduce the experimental and other illustrations or to do anything like justice to the lecturer's manner, and it must therefore suffice to say that lasting regret must deservedly be the share of those who read only and miss the living interest that fell to the lot of those who heard and appreciated to the utmost.

ANNOTATIONS.

THE RECTIFICATION OF THE REGISTER of Chemists and Druggists is a duty that devolves upon the Registrar of the Pharmaceutical Society, in accordance with Section X of the Pharmacy Act, 1868, which empowers him to erase the names of registered persons under certain conditions. The first step in the direction of revising the Register for any given year is taken a few weeks after the list is published, a copy of the issue of the *Pharmaceutical Journal* containing the list of subscribers to the Benevolent Fund being sent to everyone whose name appears on the new Register. Copies that cannot be delivered for any reason are returned to headquarters and registered letters are then posted to the addresses on those copies, in accordance with Section X. In any case where no reply is received within the period of six months from the date of sending such registered letter, a second similar communication is sent, and in the event of no reply to that being forthcoming within three months, the person's name and address are advertised in the Journal, so as to provide an additional opportunity of preventing erasure. A list of names liable to be erased is published in this week's issue (see page 423), the usual formalities having been duly carried out in every case, and unless the persons whose names are there included communicate with the Registrar, at 17, Bloomsbury Square, W.C., on or before December 30 next, their names will be erased in accordance with the Statute.

SENDING TWO REGISTERED LETTERS at the stated intervals is all that the law strictly requires, but it will be observed that the Registrar does much more than this. The copy of the Journal sent in February is certain to be delivered if by any possible means the postal authorities are able to find the individual to whom it is directed, and the objection sometimes raised with regard to the sending of registered letters—that they can only be delivered at the address indicated—is thus fully met. But, in addition to this, there is the second extra precaution against erasure of the names of persons yet in business—publication in the Journal. The maintenance of a correct Register is thus seen to be far from a simple task under any circumstances. But it is rendered increasingly difficult by the carelessness of many of those who are most directly interested, and the complaints of lack of care in keeping the Register that are frequently made are almost invariably without foundation. In most instances the carelessness is on the part of the persons registered, who neglect to notify their change of address to the Registrar, even after receiving the special copy of the Journal, which has been re-directed by the postal authorities. Any registered letter subsequently sent goes to the old address, is duly returned in accordance with the Post Office regulations, and as the individual probably does not see the Journal wherein his name and address are advertised later, in due course his name is struck off the Register. And yet he grumbles when he discovers what has happened!

AN ANNUAL REGISTRATION FEE, if it could be imposed in every case, would put matters upon a much more satisfactory basis. Omission of a name from the Register would, at least for a time, have the effect of disqualifying the individual, and that would be so unsatisfactory to the person concerned that comparatively little difficulty would be experienced in keeping the Register correct. Prosecution of one or two persons who had allowed their names to be erased, either for illegal use of title or for keeping open shop for the retailing of poison, and subsequent publication of reports of the cases would have a beneficial influence upon memories that had proved false to their owners. As a general disciplinary measure, too, the necessity of annual re-registration would prove very effective.

LOCAL SECRETARIES OF THE PHARMACEUTICAL SOCIETY are able to do much good by affording prompt information to headquarters of any matters that seem to call for consideration on the part of the Council. Many of them, as well as divisional secretaries, have also been of great assistance in many ways to the Editor; in fact, the advantage of having some four hundred of the proprietors of the Journal acting as friendly correspondents throughout the length and breadth of Great Britain, is inestimable. This acknowledgment is especially due at the present time, a large number of communications having been received during the past few days from recently-appointed local secretaries, who write to express their intention of assisting in maintaining the *Pharmaceutical Journal* as the chief organ of British pharmacists.

DIVISIONAL SECRETARIES, who take the place of local secretaries in the different districts of London and Edinburgh, are able with comparative ease to meet from time to time and discuss various matters of interest, concerning which it is desirable that they should agree upon a common policy. In the case of local secretaries this is only practicable to a limited extent, but at the same time interchange of ideas is desirable, nay, even necessary, if progress in pharmacy is to be uniform all over the country. The pages of the Journal offer themselves as the most suitable means of supplying the deficiency in opportunities of conferring together, and local secretaries should not hesitate, therefore, to avail themselves of this means of intercommunication.

AS THE ORGAN OF RETAIL PHARMACISTS, *i.e.*, of members of the craft who devote themselves directly to the professional duties of pharmacy, the *Pharmaceutical Journal* fills an exceptional position, and the interests of its subscribers, who are also mainly amongst the ranks of its proprietors, are never allowed to suffer as might be possible in the case of a proprietary venture run for the sake of profit, pure and simple. If in any respect our pages fail to accord with the needs of the times, the remedy is simple, as every feasible suggestion will always be carefully considered. In return, readers are asked to do a little more than quietly approve of what is done, for in a co-operative concern such as this is, no one should be content to receive benefit without attempting to render corresponding service. Thus and thus only can the Journal be made to yield the greatest possible good to the greatest number of its supporters, and readers are asked to bear this point in mind accordingly.

THE SPECIAL COLONIAL ISSUE of the Journal will be sent out a fortnight hence, when a large number of copies will be distributed to pharmacists, hospitals, and wholesale houses throughout Australia, New Zealand, Tasmania, China, Japan, India, Ceylon, South Africa, the West Indies, Straits Settlements, etc., etc., the names and addresses having been taken from the most recent and authentic sources, and every possible care taken to make the distribution as comprehensive as possible. Readers who wish to attract attention abroad to novel preparations, apparatus, etc., should therefore seize upon this opportunity of securing the desired end.

A DESCRIPTIVE TRADE INDEX will be an attractive feature of this special issue, and should prove of the greatest possible utility to everyone connected with pharmacy. It will contain notices of all the more prominent firms who appeal to chemists and druggists through our pages—giving a general idea of the class of business

done by each firm, together with particulars of the firm's chief specialties—and should serve as a convenient and permanent guide for buyers, whether at home or abroad. As far as possible the notices thus published will be based on information supplied by the firms themselves, and those who have not yet furnished the necessary particulars are requested to do so without further delay.

THE SALTERS' RESEARCH FELLOWSHIP has been conferred upon Mr. Thomas Tickle, who was a Bell Scholar in 1892 and has been connected with the School of Pharmacy practically ever since. During his year as a Scholar he was awarded silver medals in chemistry and pharmacy, a bronze medal in botany, and the Pereira Medal. He was afterwards appointed Redwood Scholar, and worked for some time in the Research Laboratory, whilst during last session he acted as Demonstrator of Practical Chemistry in the School of Pharmacy.

The LONDON WATER SUPPLY and it fitness, or unfitness, for human consumption received attention in the *British Medical Journal* last week. It is pointed out that while the systematic reports of the "distinguished analysts" retained by the water companies, and appointed by the Royal Commission, uniformly bear testimony to the excellence of the filtration and the purity of the supply, the latest report published by the London County Council alleges that the London water supply is from time to time grossly polluted with sewage, which the filter-beds of the water companies fail to arrest. Moreover, the suggestion is made that this condition of things probably exists more often than not. Dr. E. Klein shows that the standards by which the purity of the water has been judged on behalf of the water companies are untrustworthy for the purpose, and he has found that the water repeatedly contains living organisms derived from sewage, with dimensions a hundred times as large as those of some pathogenic organisms. It is probable, therefore, that the latter would easily pass through filtering media that fail to arrest the larger forms. Our contemporary recommends that, pending the results of a complete investigation of the matter, prudent people should either rigidly boil their water or subject it to Pasteur filtration for themselves. Some "prudent people," however, may be inclined to ask why they should need to incur this trouble, and what is the value of reports by "distinguished analysts"?

THE IMPERIAL INSTITUTE RESEARCH LABORATORY may be said to have been formally inaugurated on Monday evening, when Mr. W. R. Dunstan, the Director of the Scientific and Technical Department of the Institute, explained in general terms what it is proposed to do, who is to do it, and where the money is to come from. The "large and well-equipped laboratories" occupy the whole of the corridors on the second floor of the Institute, and here is working the chemical staff, including most of the whilom research students in the Pharmaceutical Society's Research Laboratory, who have accompanied their chief to his new quarters. Natural products from India and the Colonies are being investigated with a view to their commercial utilisation, some of the inquiries already initiated dealing with the improvement of Indian opium for medicinal purposes, the examination and valuation of fibres and tanning materials, and the chemical examination and therapeutic trial of important Indian and Colonial medicinal plants. As to the funds, the Commissioners of the Great Exhibition pay the staff, whilst the Goldsmiths' Company has provided the equipment of the laboratory and much of the apparatus. The Salters' Company provides the endowment for a research fellowship of the annual value of one hundred and fifty pounds.

CHEAP OXYGEN is promised from America, according to the *Daily Chronicle*, which publishes a report to the effect that oxygen gas is now being manufactured across the Atlantic at a cost of threepence per thousand (cubic ?) feet. The process as described consists in blowing air through a mixture of caustic soda and black oxide of manganese, at a temperature of 500° to 600° F., manganate of soda being thus formed. This is subsequently acted upon by a current of steam forced through the apparatus, and the oxygen thus liberated in a pure state. This is an old plan, but the inventor claims to have overcome the difficulties which have heretofore prevented the process becoming a commercial success, by bringing the air and steam into more intimate contact with the chemicals than is possible by other methods.

PHOSPHORUS IN OPEN CARTS seems out of place, yet the daily papers report that while a cart loaded with phosphorus was going along the City Road, London, it was seen to be in flames, and the fire brigade had to be summoned to extinguish the fire. Although the roadway was subsequently swept, a young boy found a piece of the phosphorus lying in the gutter. This he put in his trousers pocket, with the result that his clothes were set on fire, and he was fatally burned. No objection can well be taken to the rider to the jury's verdict "that there was great negligence on the part of someone in allowing so highly inflammable a substance to be within reach of children."

THE CHEMISTS' BALL will be held at the Portman Rooms on Wednesday, January 20, 1897, and at a meeting held at 17, Bloomsbury Square on November 2, the following were elected on the Committee to make the necessary arrangements:—Messrs. Attfield, Bowen, Bemridge, Carteighe, T. H. Francis, Hills, T. C. W. Martin, Mathews, Phillips, A. C. Preston, Robbins, and J. C. Umney. At a subsequent Committtee meeting Mr. Walter Hills was elected Chairman of the Committee, Mr. Michael Carteighe having resigned after filling the post almost since the ball was first held, thirty-one years ago. Mr. J. C. Umney was re-elected as Secretary, and asks us to state that he will be glad to receive the names of any who are willing to act as Stewards, the liability of each Steward being limited to one gentlem n's ticket and one lady's ticket, at 17*s.* 6*d.* and 12*s.* 6*d.* each respectively.

PROPOSED TESTIMONIAL TO DR. ATTFIELD.—We learn a movement is on foot among some of the former students in the School of Pharmacy to signalise Dr. Attfield's retirement from professorial life "by an acknowledgment of his long labours and great services" in the cause of Pharmacy. To this end a Committee is being formed, and it is proposed that those willing to be members of that Committee should contribute sums not exceeding ten shillings each, whilst other subscribers should contribute not more than five shillings each. What form the testimonial shall take remains for future decision. Meanwhile, everyone desirous of contributing, whether resident in England or abroad, is invited to signify his intention of subscribing to the honorary treasurer and secretary, *pro tem.*, Mr. John Moss, 39, Tressillian Road, St. John's, London, S.E. It may well be imagined that Mr. Moss has burdened himself with a task the magnitude of which may result in serious hindrance to his other duties. Nevertheless, everyone ought to subscribe who can.

THE WESTERN CHEMISTS' ASSOCIATION, of London, holds its annual dinner on Wednesday next, November 18, at the Café Royal, Regent Street, W., at 7 p.m., tickets (7*s* 6*d.* each) can be obtained from Mr. J. H. Mathews, 68, Queen's Gardens, W.; Mr. Herbert Cracknell, 17, Craven Road, Westbourne Terrace, W.; or Mr. Dyson, 35, Gloucester Road, S.W.

PHARMACEUTICAL SOCIETY.

DONATIONS TO THE LIBRARY AND MUSEUM.

At a meeting of the Library, Museum, School and House Committee, held on Wednesday, the 11th inst., the Librarian presented the following report of donations :—

To the Library (London).

Royal College of Surgeons of England:
Calendar, 1896.

University College, Liverpool:
Calendar, 1896.

University College, Nottingham:
Calendar, 1896.

Mason College, Birmingham:
Calendar, 1896.

City of London College:
Calendar, 1896.

British Pharmaceutical Conference:
Year-Book of Pharmacy, 1896, two copies.

Mr. J. G. F. Richardson, Leicester:
A copy of a special edition of the Hanbury Catalogue.

Dr. R. A. Philippi, Santiago:
Plantas nuevas chilenas, 1896.

To the Library (Edinburgh).

British Pharmaceutical Conference:
Year-Book of Pharmacy, 1896.

The following report of donations was presented by the Curator :—

To the Museum.

Messrs. Evans, Lescher and Webb, London:
Specimen of adulterated Matico.

Messrs. T. Christy and Co., London:
Specimen of the seeds of *Sterculia diversifolia.*

Mr. F. Baker, Sandwich, through Mr. A. Bottle, Dover:
Chinese Dispensing Scales.

Dr. G. Schweinfurth, Professor of Botany, Cairo:
Specimens, from Makul'a, of fresh myrrh and conical cakes prepared from it, Mogor or Incense bark, Luban Bedawi, Habbak haddi, gum aratic, Samogh gum arabic, Booma gum, and benzoin imported from Java.

To the Herbarium.

Mr. Frank Giles, Folkestone:
The Herbarium to which the Silver Medal was awarded in 1896.

Mr. H. W. Ridley, M.A., Botanic Gardens, Singapore:
Seventy Specimens of Medicinal Plants employed by the Malays.

Mr. I. Meiring, Cape Colony:
Specimen of the Plant yielding Proteac'n.

To the Museum (Edinburgh).

Mr. W. Gardiner, Edinburgh:
Specimen of *Datura stramonium*, in fruit, grown at Newington, Edinburgh.

Mr. D. Cant, Arbroath, through Mr. J. Jack, F.L.S.:
Fine Specimen of Pure Beeswax.

EVENING MEETING IN LONDON.

The first evening meeting of the present session was held on Tuesday, the 10th inst., when Professor J. Norman Collie gave a lecture on the newly-discovered elements, argon and helium.

Mr. WALTER HILLS, President of the Society, took the chair at 8 o'clock, and briefly introduced Dr. Collie as the new Professor of Chemistry in the Society's School, and as being especially qualified to discourse on the birth of those two new elements, having been associated with Professor Ramsay in the investigation of them.

Professor J. NORMAN COLLIE: Mr. President, ladies, and gentlemen, it is with very great pleasure that I have come here to-night in order to tell you about those two elements, argon and helium, because I have taken a very great deal of interest in them, having had the good fortune to be able to work at them with Professor Ramsay. I may say that I was there at their birth ; I have seen them growing up, and I know probably most of what is known about them. I propose first of all to deal with the gas argon, and to tell you something about that. I must begin, I think, at the beginning, and as argon is, as you know, one of the gases present in the air, I want just to say a few words about air to start with, and about the other more well-known gases which are present in the air, about which we all of us know a good deal at present.

Professor COLLIE then proceeded with his lecture, a full report of which will be found at page 417.

At the conclusion of the lecture, which was illustrated by lantern slides, specimens of minerals and apparatus, and experiments,

The PRESIDENT, in moving a vote of thanks to Professor Collie for the brilliant lecture he had delivered, said he might be allowed to express his satisfaction that Englishmen, or perhaps he ought to say Britishers, had had some part in these great discoveries, and that a principal part. Of course science was universal and cosmopolitan, but it was pleasing to know that many of these discoveries had been the result of the work of Englishmen. He might also remark that argon seemed to get purer and better the more it had to endure, and he hoped they would all draw a moral lesson from the fact.

The vote of thanks having been carried by acclamation,

Professor COLLIE, in reply, expressed his obligation to the friends who had lent him apparatus, tubes, and specimens of minerals. especially Professor Ramsay and Mr. Jackson, of King's College, Some of the experiments he had never before seen himself.

CHEMICAL SOCIETY.

OPENING OF THE SESSION.

The first ordinary meeting of the session was held on Thursday, November 5, Mr. A. G. Vernon Harcourt, F.R.S., President, in the chair. After the reading of minutes and candidates' certificates, the President selected Dr. Chattaway's paper for reading. It was entitled—

THE CONSTITUTION OF NITROGEN IODIDE.

The author commenced with a recital of the work that had already been done on the subject by various renowned chemists, and when one considers the extraordinary properties of nitrogen iodide it is not surprising that their results should be entirely different from each other. Dr. Chattaway has come forward with yet another formula (NH_3I_2), and one, moreover, which is well backed up by good theories and experimental evidence.

Gay-Lussac believed that nitrogen iodide was a substitution product of ammonia, and ascribed to it the formula NI_3. This view was also held by Vauquelin and Davy. Mitscherlich gave it the formula NI. Millon and Marchand maintained that the body must contain hydrogen, and so gave it the formula NH_2I. The formula of Bineau and Gladstone is NHI_2, whilst that of Bunsen is NI_3NH_3.

Nitrogen iodide cannot be obtained in a dry state on account of its explosive properties, and therefore any process employed to arrive at its constitution must necessarily be somewhat roundabout. This substance even under water is liable to explode on the slightest friction, and the author has also found that the impact of a thin jet of water is sufficient to bring about an explosion.

It is best prepared by pouring a concentrated solution of iodine in potassium iodide into excess of strong ammonia. Alcohol is not admissible, as it sets up decomposition with formation of iodoform. The precipitated iodide must be freed from all impurities, such as ammonia, etc., and this is a matter apparently of very great difficulty, as after a certain point in the process of washing has been reached the black substance begins to decompose under the agency of the water.

When the nitrogen iodide is treated with $Na_2S_2O_3$ there is decomposition, which Dr. Chattaway expresses thus :—

$$NH_3I_2 + 2Na_2S_2O_3 = 2NaI + Na_2S_4O_6 + NH_3.$$

The ammonia is titrated, and it is in this way that Dr. Chattaway has been led to build up his formula. He has always obtained the same results by this procedure, viz., one molecule of ammonia and two atoms of iodine. Nitrogen iodide is not precipitated in dilute solutions, and it is interesting to note that the method of bringing the reagents together is all-important. When the iodine solution is added to the ammonia the precipitate is formed, but if the ammonia is added to the iodine solution, there is no precipitation even with solutions of the same strength. And the author further observes that never more than half the total iodine used has been found in the black compound. The hydrates of sodium and potassium decompose the nitrogen iodide, and so do many other substances, many of the reactions of which were illustrated on the board by equations.

The author concluded his paper with some remarks on our knowledge of the chemistry of iodine, which he said was still very imperfect. For instance, he said, we may have free iodine in a large excess of free ammonia, and so also with potash.

Dr. Gladstone, at the President's request to speak, passed complimentary remarks on Dr. Chattaway's work, and expressed the opinion that the problem had been solved. He was gratified to find that his own formula (NHI_2) agreed with Dr. Chattaway's (NH_3I_2) in so far that in both the nitrogen and iodine were present in the proportion of 1 to 2.

Then Dr. Armstrong rose, but not to criticise the paper. It was to complain of the time Dr. Chattaway had taken up in reading it, viz., threequarters of an hour, when it might easily have been done in a third of the time. He made this complaint in justice to other authors, and more especially as on the present occasion there was a very heavy list of papers down for reading.

The next paper was by Messrs. Cross and Bevan, on the—

CARBOHYDRATES OF CEREAL STRAWS,

and is a continuation of work they had done in the spring. The chief aim of the authors in the present paper was to isolate the furfuroids at the critical periods in the growth of the crops in order to ascertain the progressive changes. The results were taken on the entire plant in the green or natural condition. Mr. Cross, who read the paper, placed figures on the board showing the results of breaking down at various periods of the products obtained from the plant by treatment with alcohol and subjection to the acid hydrolysis process under certain conditions of temperature and pressure.

As the next paper was announced there was an exodus on the part of the large audience, and Dr. W. A. Bone read his two papers to thinly-peopled benches. The first paper, entitled

THE DIRECT UNION OF CARBON AND HYDROGEN,

is in continuation of one read on the same subject some time ago. It is a research on the gaseous products obtained when hydrogen is passed over carbon at a red heat, and also at the temperature of the electric arc. The carbon is enclosed in the porcelain tube of an ingeniously constructed piece of apparatus, a sketch of which was shown on the lantern screen. The hydrogen used is prepared from sulphuric acid and re-distilled zinc. Samples of the gas in the globe are collected at intervals of five minutes during an hour or so. Acetylene, methane, and hydrocyanic acid are always produced, the last named substance in very minute quantity, and present only as an accidental impurity. The following are a few of the percentages obtained of the various gases:—

	5 minutes.	45 minutes.
Acetylene	2·1	8·1
Methane	1·0	2·6
HCN	Nil	0·5 in 60 minutes.

The author also gave a table of the products obtained on submitting methane and acetylene to the electric arc.

Dr. Kipping asked the author if benzene had been looked for, seeing that acetylene was one of the gases present.

Dr. Bone replied that he had never been able to detect benzene, although a slight trace of naphthalene had been found.

The last paper was by the same author, on

THE EXPLOSION OF ACETYLENE.

The acetylene employed was prepared from copper acetylide. The gas explodes violently with a small quantity of oxygen, about 20 per cent. The following table of percentage composition of the products obtained was thrown on the screen:—

CO_2	Slight amount.
Acetylene	,, ,,
H	54·42 per cent.
CO	41·91 ,,
N	Present in original mixture.

No marsh gas could be detected.

The following were among the many papers taken as read:—

Note on the Solution and Diffusion of Certain Metals in Mercury," by W. C. Roberts-Austen, F.R.S.

"The Economical Preparation of Hydroxylamine Sulphate," by E. Divers, M.D., and T. Haga.

"How Mercurous and Mercuric Salts Change into Each Other," by S. Hada.

"The Effect of Heat on Aqueous Solutions of Chrome Alum," by Margaret Dougal.

"The Periodic Law," by R. M. Deeley.

"The Colouring Matters in British Plants," by A. G. Perkin.

CHEMISTS' ASSISTANTS' ASSOCIATION.

At the meeting held at 103, Great Russell Street, W.C., on Thursday, November 5, a large number of members were present, Mr. C. Morley, President, in the chair. The minutes of the previous meeting were read and confirmed, and Mr. William Browne was nominated for membership.

Mr. T. Morley Taylor, whose name appeared on the programme for a paper on "Biological Science, Its History and Development," had been busily employed earlier in the evening arranging in prominent positions numerous coloured diagrams illustrating the various stages of development in the life and growth of plants and mammals; the action of the heart and veins, circulation of the blood; respiratory organs, etc. He had also exhibited under powerful microscopes several well-mounted specimens of human spermatozoa, etc.

BIOLOGICAL SCIENCE—SOME FACTORS IN ITS HISTORY.

In introducing the subject, Mr. Taylor said he should endeavour to give a brief account of some of the more important observations and theories which throughout the history of intellectual man had tended to show the nature of life and the relation to each other of all living organisms. The great doctrine of evolution which enunciates the common origin of plants and animals, and the development of higher forms from the lower, was the base of biological science, and it was in great part the story of this theory up to the time that Charles Darwin published his 'Origin of Species' that he wished to give a cursory glance at. Commencing with the theories put forward by the early philosophers of Greece, 450 B.C., Mr. Taylor briefly but graphically sketched the many and various views held by different schools of philosophers with regard to the origin of life in plants and animals up to the time of Richard Owen in the middle of the present century. The earliest philosophers, he said, in their anxiety to find the cause of life, advanced several theories, some more or less suggestive, and others extremely ridiculous. One school held that the original types of plants and animals rose spontaneously from the sea-water. Others suggested that the marine ooze was a more likely origin, and were of opinion that life developed gradually as a succession of experiments. That plants existed before animals, and that Nature removed forms that were developed imperfectly and replaced them by perfect forms, and that structures appeared often to become adapted to certain purposes.

When Aristotle (284–322) appeared as the founder of "natural history," he complained bitterly in his writings that no basis had been laid for him by his predecessors, and that there was no model set for him to work upon. His eagerness for exact knowledge led him to undertake an immense amount of work in classifying and describing all the plants and animals he could obtain, and his observations on these led him to notice that each organ had its allotted task, and to conceive a direct single chain of evolution from the marine polyps to man. He considered that the cause of progressive development was an inexplicable perfecting principle in Nature.

The science of Aristotle, said Mr. Taylor, influenced the minds of men for many centuries. Even the early fathers of the Christian Church, owing to this influence, applied a naturalistic interpretation to the Mosaic account of the Creation, stating that the Creator had only given the fundamental laws to Nature, by which she was gradually to develop her marvellous productions. He then touched upon the Great School of Ptolemies at Alexandria and the theories on human anatomy as taught there by Erasistratus and Herophilus, and the progress made under Galen and his successors, until owing to the antagonistic influence of the Church, scientific pursuits gradually died out in Europe, thus leaving the heritage of the Greeks to be fostered by the Arabian philosophers and physicians until the end of the thirteenth century, when schools and universities began to be founded. During the next three hundred years very little was done to advance natural science, but about 1516 to 1665 Conrad Gessner, a Swiss naturalist, gathered together all that he considered worth recording, and from this wrote a 'History of Animals,' in six books, in which he adapted something more like a systematic arrangement than had previously been done. About the same time Cesalpin, an Italian scholar and physician, also wrote sixteen books concerning plants.

The idea of sex in plants originated with the Greeks, although they had no idea of the function of stamen or pistil, but Cesalpin repudiated it altogether. He considered the outer parts of the fruit were an extension of the epidermis and cortical portion of the stem, and that the seed sprang from the pith, which was the seat of

plant life, as the heart was of animal life, and this question was not cleared up for 250 years, when some of the greatest anatomical and physiological discoveries began to be made. At this time Fabricius, the professor of anatomy at Padua and teacher of the illustrious Harvey, wrote on the structures of the eye, ear, throat, intestines, and the development of many different animals. He it was who discovered the valves in the veins, which gave the first clue to his pupil Harvey to the circulation of the blood. It was also during Harvey's time that societies began to be formed for scientific study, the Royal Society of London and the Paris Academy of Science being founded, and the microscope very much improved.

Mr. Taylor considered, however, that modern scientific thought commenced with Bacon, who died in 1626, and Descartes, who died in 1650. He concluded by briefly touching upon the theory of the cell and its development as expounded by Carl Wolff, of Berlin, the fertilisation in plants as taught by Camerarius, professor of natural philosophy at Tubingen in 1694, embryonic development as introduced into the study of comparative anatomy by Von Baer and Müller about 1830, the circulation of the blood, respiration, and the origin of the skeleton.

The President, in thanking Mr. Taylor, said the paper was a very ample summary of all the theories that had been promulgated about the science of life in different ages; when they looked back they might say it was only in recent years that any intelligent theories had been put forward, some of the old theories being grotesque in the extreme. The paper raised no contentious questions at all, it being more of an instructive character, and they were all very much indebted to Mr. Taylor for it.

Mr. Strother said he quite coincided with the remarks made by the President. Mr. Taylor had dealt with the circulation of animals and also in vegetable life, but had not touched upon insect life, He would like to know whether there was any great peculiarity in the respiratory organs in insects, and whether they had hearts.

Mr. Moore (Secretary) thought the paper was a very appropriate one because pharmacists, though obliged by their curriculum to study botany, were rather apt to give zoology a minor place. He considered zoology was quite as important as botany.

Mr. George Roe said he was of opinion that biological science ought to be particularly interesting to pharmacists, because they were continually coming in contact with medical men, and ought to be familiar with the terms they sometimes used.

Mr. Taylor, having briefly replied, the meeting was then adjourned

LEEDS CHEMISTS' ASSOCIATION.

ANNUAL MEETING.

The annual meeting of this Association was held at its room in the Church Institute, on October 30, 1896, Mr. George Ward, President, in the chair.

Mr. W. D. Pollitt, Honorary Secretary, read the following report:—

"The Council, in presenting the twenty-eighth annual report, records with deep regret the death of Mr. J. A. Hirst, many years a member, and formerly Honorary Treasurer of the Association.

"A meeting of registered chemists was convened by the Council for May 6, 1896, in the Law Library to hear the proposals of a deputation from the Proprietary Articles Trade Association on the sale of proprietary articles. The Council, without committing itself in any way, thought it desirable in the interests of our Association that such a meeting should be held under its auspices. The meeting was fairly well attended, and a resolution supporting the objects of the P.A.T.A. was carried.

"The receipts for the past year (including a balance in hand of £1 10*s.* 11*d*) are £10 8*s* 5*d*, and the expenditure has been £10 9*s.* 5*d.*

"The Library and Museum have been maintained in an efficient state, and the room affords considerable facilities to students for study. It is very desirable that associates should avail themselves more freely of the advantages the Association offers by its comfortable room, Library, and Museum, and the Council would respectfully request principals to urge their assistants and apprentices to make more free use of these advantages."

Mr. Richard Reynolds moved that the meeting should express its great regret at the death of Mr. J. A. Hirst, and offer sympathy with his family. This was seconded by Mr. Edwin Yewdall, and carried unanimously.

The report and Treasurer's account were adopted on the motion of Mr. Yewdall, seconded by Mr. Branson.

Votes of thanks were accorded to the Pharmaceutical Society, the Executive Committee of the British Pharmaceutical Conference, and the British and Colonial Druggist Publishing Company for the gifts of their respective publications—*The Pharmaceutical Journal*, 'The Year-Book of Pharmacy.' and *The British and Colonial Druggist.*

The officers of the Association were cordially thanked for their services during the past year.

The following officers were elected for the ensuing year:—

President, Mr. George Wood, F.I.C.
Vice-President, Mr. Edwin Yewdall, Ph.C.
Honorary Treasurer, Mr. Peter Jefferson, Ph.C.
Honorary Secretary, Mr. W. D. Pollitt.
Committee, Messrs. J. J. Anning, F. W. Branson, F.I.C.; J. W. Hardman, Richard Reynolds, F.C.S.; Samuel Taylor, and G. W. Worfolk.
Auditor, Mr. Edward Brown, Ph.C.

ROYAL COLLEGE OF PHYSICIANS, EDINBURGH.

OPENING OF THE NEW RESEARCH LABORATORY.

The new research laboratory of the Royal College of Physicians, Edinburgh, which has been fitted up in what were formerly the offices of the Edinburgh City Parochial Board, at 2, Forrest Road, was formally opened on Friday, November 6, by the President of the College, Dr. Batty Tuke, in presence of a company of ladies and gentlemen, among whom were Messrs. J. Laidlaw Ewing, J. B. Stephenson, Peter Boa, C. F. Henry, and J. Rutherford Hill.

The premises are lighted with electricity, each department being independent of the others, and heated throughout with hot-water pipes to avoid dust. The supply of gas and water to each department may be shut off without interfering with the work in the other sections of the building.

Hot water and steam for heating water baths, etc., are laid on in the various rooms, both being supplied by a small high pressure boiler and circulating cistern.

In each department is a small telephone by which every other part of the building may be communicated with.

In equipping the premises as a laboratory, the following considerations have been kept in view:—

1. To provide for research work in bacteriology, in histology, and in chemical and experimental physiology and pathology.
2. To provide for the examination of morbid specimens for medical men.
3. To provide for ordinary and microscopic photographic work.
4. To make suitable provision for the preparation of curative antitoxins.

On the ground floor to the left of the entrance door is the superintendent's room, which is also used as a museum and reference library. Behind this, on the same side, is the experimental room, which is fitted up with the most modern appliances for the carrying on of experimental work. In the old laboratory the recording gear was driven by water power; in the new premises this work is done by two small electric motors placed beneath the floor. To the right of the entrance door is the general office and reporting room. The west end of this room is fitted for the chemical examination of specimens, and the east end is fitted for microscopic work. Opening off this room is a room for micro-photography, fitted with a micro-photographic apparatus and an arc lamp, and adjoining is a photographic dark-room for the development of plates. There is also a large store-room attached to the general office.

On the first floor, to the left, is the chemical department, consisting of three rooms, the walls of which are painted with zinc white and highly glazed. The first apartment is the general chemical room, which has a centre bench fitted for six persons, and at one end is a large soxhlet fat-extraction apparatus heated by steam. Every convenience which experience has suggested and ingenuity devised is provided for the workers. The next apartment is the fume room, fitted with slate and stone tables. The draught for the fume chambers is secured by a small fan driven by an electric motor. At one end of the apartment is a large evaporating bath heated by steam, so that what formerly took twenty minutes in the old place can now be accomplished in a few minutes. Behind this apartment is the balance room and a small closet for washing apparatus.

On the first floor to the right is a long passage, from which open a large and a small histology room, both fitted for microscopic work, and giving accommodation for four workers. The next opening off this passage leads to the bacteriological department, which consists of four apartments. First, there is the bacteriology room, with places for two or three investigators. The walls of this room are painted with zinc white and highly glazed. Opening off this room

a short flight of steps leads to a photographic studio, with a dark-room adjoining. Next is a smaller preparation room, reached by descending a flight of steps from the bacteriology room. This room opens upon the courtyard by a stone stair. Opening off the passage between these two rooms is an incubating chamber, in which the germs of diseases, transmittable by germ, are produced for research purposes. There is also a small room for washing apparatus. The top floor is used as the assistants' house.

Behind the building is a courtyard and green, on the west of which are the furnace house and necessary outhouses, in some of which the animals used for experimental purposes are kept. The cost of purchasing the site and building, and adapting the latter to the purposes of a research laboratory, amounted to £10,000, and it is expected that its maintenance will amount to £1000 a year. The new laboratory, like the old one, is open to those who desire to undertake original investigations in the medical sciences on their giving evidence of being able to undertake such work with a good prospect of success. While the examination and reporting on morbid specimens was instituted primarily for the Fellows of the College, in any really difficult case assistance is given to any medical man who may apply.

On the opening day the company who assembled between four and six o'clock had an opportunity of inspecting the various departments of the laboratory and having the apparatus explained to them by the superintendent, Dr. Noel Paton, and his assistants. The opening ceremony took place at five o'clock.

Dr. Batty Tuke said that before he discharged the pleasant duty which devolved upon him they would permit him to give a short retrospect of the history of the Institution they had just inspected, and to make a statement as to its functions. In 1888 the College, after mature deliberation, determined to establish and equip a laboratory for original research into all the sciences bearing on medicine. The College regarded the scheme as an experiment, and wisely proceeded to its elaboration experimentally. The College did not at once plunge into the mortar tub, it did not proceed to erect buildings until it knew that such would fulfil a useful end, and accordingly it rented an old house in Lauriston Lane, which was thought to be sufficiently suitable for the purpose. Nor did the College rush into unnecessary expense in adaptation and equipment. Most fortunately the services of Dr. German Sims Woodhead were secured as superintendent, and he brought to bear on the enterprise his extensive technical knowledge and indefatigable energy. Mainly due to Dr. Woodhead's efforts, the College found itself in a few months in possession of a well-adapted and equipped workshop, at the small outlay of £1000. It was of importance to emphasise this fact, as showing how much could be done for the promotion of science at a small outlay. So much credit accrued to Dr. Woodhead that when the Royal College of Physicians and Surgeons of London established a research laboratory, he was translated to the superintendentship of the then larger and more imposing institution, and he was succeeded by Dr. Noel Paton. The success of the undertaking soon became assured, for at once numerous workers applied for tables, and it was not long before the resources of the laboratory became strained in this respect. A long series of investigations were undertaken into all departments of medicine and surgery, and the allied sciences—chemistry, anatomy, physiology, pathology, bacteriology—the results of eighty-two of which researches had been recorded in five volumes of laboratory reports, and a sixth was in course of preparation. It would be invidious to select for special mention the names of men whose works had been recorded; but he might say that much of the work in the old laboratory had been recognised as materially advancing their knowledge regarding the body in health and disease, and had been accepted as authoritative. Much good solid work was done; work begat work; new lines of investigation were opened up. The science of bacteriology advanced stride on stride, and new processes came into play demanding wider space. Photography, especially micro-photography, began to be more and more extensively employed. The work of reporting grew year by year, and eventually the College directed that the preparation of antitoxin serums should be undertaken in its laboratory. The College recognised that its experiment had been successful, and it soon became evident that more extensive and more convenient premises were necessary if the laboratory was to become a permanent institution. The Laboratory Committee was accordingly directed to seek for a suitable site. The Committee sought long in vain, but eventually was able to recommend the College to acquire the building in which they were now met. The work of adapting and equipping the Institution had been an arduous and anxious task. He could not speak in too warm terms of the manner in which Dr. Noel Paton had performed this duty. He had directed all his energies to the work for many months past, but the completion of the work must have brought with it the satisfaction of feeling that he was the superintendent of the most perfect research laboratory in the United Kingdom. Dr. Paton would be the first to acknowledge the valuable assistance he had received from Drs. Milne Murray and Ralph Stockman, and to these gentlemen the College owes a debt of gratitude. As to the functions of the laboratory, it was, in the first place, an institution which was practically open to all investigators, who could work within its walls free of all expense. Of course, preference was given to Fellows and members of the College, but they had always been able, and in the future would surely be able, to accommodate any man who could show to the satisfaction of the Committee and Council that he had a good plan of work in his head. In short, he might say that their motto was "Patet omnibus."

Secondly, they encouraged collaborate work. Small committees of experts combined to carry out investigations into special points. This system had obvious advantages, and, moreover, it kept alive that spirit of scientific *camaraderie* which, he was happy to say, had been a prominent characteristic of the inner life of the laboratory. Thirdly, the superintendent and his staff were prepared to examine and report on morbid and other specimens submitted to them by practitioners. This was one of the primary objects of the laboratory, and constituted an important function—important not only to the profession, but also to the public. Further, they were willing to conduct investigations concerning zymotic disease, and other matters bearing on public health. Lastly, the College had undertaken the preparation of antitoxin serums. After great difficulties, the staff had succeeded in preparing pure anti-diphtheritic serum, and they would soon be able to issue it to practitioners, although for a short time the supply would be limited. The cost of the laboratory had been considerable. From first to last the expenditure on site, on adaptation of buildings, and on equipment had not been much less than £10,000, and its maintenance would, in round numbers, cost £1000 per annum. He felt certain, however, that the College would not have considered itself justified in making such a large outlay had it not been satisfied that in providing the laboratory it was fulfilling its duty to the profession and the public. The theory of action of the College was that it was but the trustee of funds held for the public good. It believed that in stimulating and maintaining the scientific spirit in the domain of medicine, in enabling the practitioner to carry the most delicate methods of diagnosis into his every-day work, in carrying on experimental investigation into the value of newly-advanced methods of treatment of disease, it returned to the profession in the best possible manner the money it had drawn from it, and in so doing was working for the public weal. This was said in no spirit of boastfulness, for they knew that they did not stand alone in their efforts to promote the advancement of medical science. They had witness of this in the establishment of pathological laboratories in connection with the principal hospitals in Scotland, in the institutions of their noble Universities, and in the maintenance of a valuable museum by the sister corporation, the Royal College of Surgeons. All were working together for one common purpose. One of the great Italian painters said that the duty of the artist was to work for the advancement of art and the glory of God. They, one and all, he with all humility submitted, were working to the same end in the domain of science. He begged to declare the laboratory opened, and asked the assemblage to bid them God-speed.

Dr. Noel Paton, called upon to say a few words, observed that although the laboratory was now being formally opened, they had been at work in it since June last, so that the company assembled saw it in working order. He had great pleasure in taking advantage of this opportunity to acknowledge the valuable aid which he had received from his able and energetic assistant, Mr. Paterson.

GLASGOW AND WEST OF SCOTLAND PHARMACEUTICAL ASSOCIATION.

"AT HOME."

At the invitation of the President and Council of the above Association, about 200 members and friends were entertained to an "At Home" in the Cockburn Hotel on Thursday evening, November 5.

Amongst those present were Drs. Carslaw, Forrester, Barr-Pollok, Robert Pollok, and A. M. Robertson; Messrs. J. R Hill (Edinburgh), Bowman and Coull (Leith), Kerr (Greenock), Harland

London), Taylor (Motherwell), McMurray (Helensburgh), and others.

The President, Mr. W. L. Currie, in welcoming the guests in the name of the Council and himself, gave some interesting details of the Association, and urged upon all those who were not yet members the necessity of becoming so, for their own advantage as well as helping the cause of pharmacy in the west of Scotland.

After tea, the "Kinninmont Prize" for 1896, consisting of a gold medal and a set of books, was presented to Mr. A. B. McDonald, the winner, by Mr. McAdam, Chairman of the "Prize" Committee. Afterwards a most enjoyable programme was gone through of music and song, and Mr. Lamb gave a splendid exhibition of parlour conjuring.

The principal feature of the evening was the exhibits, Messrs. T. and H. Smith, of Edinburgh, contributing a collection of the rarer alkaloids of opium, narcotine, cryptopia, xanthalin nitrate and muriate, and specimens of the various opiums on the market. Mr. Riddell had on view all the latest novelties in photographic material; Messrs. Baird and Tatlock sent specimens of large crystals, duplicates of rare gems in glass, and a number of scientific curiosities. The exhibition given by the last-named firm of the Röntgen rays came in for great attention from the company.

Dancing took place in the smaller hall, Mr. M. Wallace acting as M.C., and the most enjoyable of all the "social meetings" of the G. and W. S. P. A. broke up about midnight.

This was the first evening of the session under the social campaign inaugurated last year, and a large increase of members is confidently expected to result.

PHARMACEUTICAL CHEMISTS' AND APOTHECARIES' ASSISTANTS' ASSOCIATION OF IRELAND.

The opening meeting of the winter session of the above Association was held in the Pharmaceutical Society's Examination Hall, Lower Mount Street, on Friday evening, the 6th inst.

The hall was densely filled on the occasion with an appreciative audience consisting of members and their friends, upwards of two hundred persons being present.

Mr. W. F. Wells, President of the Pharmaceutical Society, presided, and amongst those present were the following:—

Mrs. Wells and friends, Captain and Mrs. Peacocke and friends, Mr. and Mrs. R. Gardiner and friends, Mr. T. G. C. Stoney and friends, Surgeon John Evans and Mr. Evans, jun., Dr. R. J. Montgomery, Dr. J. A. Walshe, Professor Tichborne, Mr. R. Simpson (member of the Pharmaceutical Council), Mr. G. Fetherstone and the Misses Fetherstone, Mr. J. B. Allister (President of the Association), Mr. McCarthy (Vice-President), Mrs. McCarthy, Mr. J. T. Turner (Hon. Treasurer), Mrs. Turner, Mr. D. O'Sullivan (Assistant Hon. Secretary), Mr. W. J. Hardy (Hon. Secretary), Mr. and Mrs. Harris, Mr. Corcoran, Mr. Nagle, Mr. Ardill, Mrs. Bell, Mrs. Digges and Mr. C. Digges, Mr. and Miss Hamilton, Mr. A. T. Ferrall (Registrar of the Pharmaceutical Society of Ireland), etc., etc.

Letters of apology for non-attendance were received from Dr. Duffey, President of the Royal College of Physicians, Ireland; Ninian Falkiner, M.B., F.R.C.P.I.; Professor Dixon, T.C.D.; Mr. R. J. Downes, Vice-President of the Pharmaceutical Society; and Mr. T. W. Robinson, Examiner to the Pharmaceutical Society.

The Chairman, after reviewing the history of the Association from its inception, suitably introduced the lecturer of the evening, Mr. W. Lamond Howie, F.C.S. (London), who then proceeded with his lecture, entitled "From Mont Blanc to the Matterhorn," which was beautifully illustrated by about 130 limelight views obtained from photographs taken by Mr. Howie whilst touring in the Alpine regions. Mr. Howie is not only one of the most distinguished amateur photographers in the kingdom, but also a widely travelled and gifted scientist. The eloquent and fascinating manner in which the subject was treated by the lecturer, together with the magnificent views exhibited of the Alpine scenery, evoked frequent outbursts of applause.

At the conclusion a hearty vote of thanks was accorded to the lecturer, having been proposed by Mr. McCarthy and seconded by Mr. Allister.

Mr. Howie, in responding, expressed the pleasure it afforded to render assistance to the Association, which, he trusted, would have a session replete with prosperity and success. A vote of thanks to the Chairman having been duly passed and acknowledged, brought a most enjoyable evening to a close.

PHARMACEUTICAL SOCIETY OF IRELAND.

MEETING OF THE COUNCIL.

On Wednesday the 4th inst. the monthly meeting of the Council was held at 67, Lower Mount Street, Dublin, at three o'clock. The President (Mr. W. F. Wells, junr.) presided, and the other members of Council present were the Vice-President, and Messrs. Grindley, Beggs, Hayes, Baxter (Coleraine), Charles Evans, Bernard, Ryan, and Kelly. The President read a letter which had been addressed to him as well as to all the other members of the Council by Mr. H. Arnold Foster, M.P., appealing to them to make a concession in favour of the apprentices to a limited company in Belfast, who were excluded from presenting themselves for the Licence Examination by the decision of the Irish Queen's Bench Division in the case of the Pharmaceutical Society *v.* Cleeland.

The President also read a letter which he had sent to Mr. Foster in reply, recapitulating all the facts connected with the question, and stating that the Council could not consistently accede to the request of Mr. Foster. That gentleman, the President said, had written a reply expressing himself satisfied. On the motion of Mr. Bernard, seconded by the Vice-President, the President's letter of reply to Mr. Foster was unanimously approved of. A letter was read from the Secretary of the Royal Academical Institution, Belfast, asking the Council to recognise its schools of chemistry, botany, and materia medica. The Registrar was directed to reply that the Council could not make any addition at present to the number of schools the certificates of which it recognised.

The President moved a resolution to the effect that the attention of the Local Government Board of Ireland should again be drawn to the practice existing of giving contracts for the supply of drugs to poor law unions, to unqualified and unregistered persons. The object of the Pharmacy Acts was to protect Her Majesty's subjects, and he (President) failed to see why the poor of the workhouses should not get the same protection as the rest of the community. In allowing these contracts the Local Government Board was aiding people to break the law.

Mr. Baxter seconded the motion, which passed unanimously.

On the motion of Mr. Evans, seconded by Mr. Hayes, the following resolution was passed:—"When recommending the College of Physicians to place cocaine on the Schedule of Poisons, the alkaloid cocaine and its salts are alone intended (when sold as such), and does not include any preparation of the leaves of *Erythoxylon coca*."

Other business having been disposed of, the Council adjourned.

ROYAL COLONIAL INSTITUTE.

An influential assembly of this body met at the Whitehall Rooms, Hôtel Métropole, on Tuesday, November 10. Sir H. Bulwer, G.C.M.G., in the chair, supported by a number of distinguished gentlemen. The Secretary, Mr. J. S. O'Halloran, C.M.G., reported that since the last meeting 125 fellows had been elected, which brought the number of new fellows elected since January 1 up to 300, an increase of 51 on the previous year. The total number of fellows was now 3970, which was the largest on record.

The Chairman in introducing Mr. John Lowles, who was to give the paper for the evening, said it was with satisfaction they learned that the Institution in its twenty-ninth year was in a most satisfactory condition both financially and in numerical strength. The work done by the Society was being more and more appreciated as time went on, all over the Empire.

Mr. John Lowles, M.P., then read a paper on "Inter-British Trade," in the course of which he described the numerous meetings and interviews held by him, while travelling in the Colonies with a view to promote a scheme for "Imperial Federation upon a Commercial Basis." He referred to the injury done to the West Indian sugar trade and the East-end refineries by the German and French bounties, and he hoped the immediate outcome of Inter-British Federation would be to put British producers in the West Indies and Queensland on a more even footing with foreign competitors. This scheme, he said, must be formulated and submitted by the Mother Country, and must be more or less elastic in its details, although fixed in its principles. It must leave the Colonies a large amount of individual liberty with respect to their tariffs, while securing a uniform preferential treatment for British manufacturers, in return, of course, for similar treatment of Colonial products in

Great Britain. Speaking of the vast areas awaiting cultivation and development in Canada, Australasia, and British Africa, he said freer commercial intercourse, cheaper and speedier means of communication must help to populate these vast continents, thus reducing the large number of unemployed at home. The great danger to British trade lay in the policy of "drift." He was afraid there was a disposition to attach too much weight to old theories, and too little weight to new facts and new circumstances.

He then dealt with the food question, and Britain's dependency upon foreign countries for supply, and suggested that food might be procured from the Colonies if a proper scheme of navigation and communication could be established between them and Great Britain. To sum up the theory of the "Commercial Union of the Empire," it appears to be to establish Free Trade between the countries and colonies forming the British Empire, to put a tariff on all foreign goods, and to form a quicker and cheaper cable and navigating communication between the countries.

At the close of the paper a long discussion followed, in which the Hon. Alfred D. Jones, one of the Canadian Delegates to the Pacific Cable Conference, Major G. C. Nield (New South Wales), Mr. G. H. Hawtayne, C.M.G. (British Guiana), Mr. R. G. Webster, Mr. G. E. Raine, and others took part.

The most important speech made in the discussion was by Major G. C. Nield, a member of the Legislature of New South Wales, Australia, who said that while all his patriotic feeling and national sentiments went out in favour of the suggestions made by Mr. Lowles, there were certain difficulties which it was only honest and manly to look squarely in the face. In Australia they had a country of vast distances and sparse population, a country specially designed for the production of raw material, in which their trade was very large. He was happy to say, however, that they purchased nearly the whole of their requirements within the British Empire. As to the disadvantages connected with the effort to prevent the threatened destruction of British commercial supremacy, he pointed out that for the five years 1891-95 the total value of imports into New South Wales were £96,061,000, while the total value of exports were £113,350,000. These were made up as follow:—Imports from other Australian Colonies, £44,339,000; exports to other Australian Colonies, £46,236,000; for the rest of the British Empire their imports had been £42,215,000, and their exports £44,372,000. The imports from foreign countries, however, were only £9,505,000, while their exports to foreign countries had been £22,741,000. Taking the relative proportions of their trade they were as follow:—Imports from the rest of Australasia, 46·48 per cent.; from the rest of the British Empire, 43·78 per cent.; from foreign countries, 9·74 per cent. The exports showed a different tale, as to the Australian Colonies they had exported 40 62 per cent.; to the rest of the British Empire, 39·27 per cent.; to foreign countries, 20·11 per cent. He thought these figures showed that British manufacturers had no reason to complain of foreign competition. Major Nield then quoted other figures with regard to the trade of New South Wales, all tending to prove that while the Colony dealt with the other Australian Colonies as much as possible, they traded with Great Britain to a far greater extent than with other countries, and he thought, seeing that foreign countries took so much of their raw material, that it would be unwise to interfere by placing tariffs on foreign goods while allowing British goods to go free.

SHEFFIELD PHARMACEUTICAL AND CHEMICAL SOCIETY.

A general meeting of this Society was held on Wednesday evening in the Montgomery Hall, Mr. Ibbitt, President, in the chair. There was a goodly number of members and friends. The minutes having been read, the Chairman called on Mrs. Manning to deliver a lecture on "Insectivorous Plants," illustrated by diagrams and dried botanical specimens. The lecturer explained the digestive apparatus of the principal British and foreign insectivorous plants, which proved of much interest. Many of the foreign plants are to be seen in the Sheffield Botanical Gardens, and the common British species, such as the sundews, bladderworts, butterworts, toothworts, etc., are common in the woods near Sheffield. Mrs. Manning expressed a hope that the students would go out and search for these plants themselves, as they would reap more benefit from a practical knowledge of the subject than by mere book study. A very hearty vote of thanks was accorded to Mrs. Manning on the motion of Mr G. T. W. Newsholme, seconded by Mr. John Austen.

CORRESPONDENCE.

All Articles, Letters, Notices, and Reports intended for publication in the Journal, Books for Review, and communications respecting Editorial matters generally must be Addressed "Editor, 17, Bloomsbury Square, London," and not in any case to individuals supposed to be connected with the Editorial Staff. Communications for the Current Week's Journal should reach the Office not later than Wednesday, but news can be Received by Telegraph until 4 p.m. on Thursday.

Any Instructions from Members, Associates, and Students of the Pharmaceutical Society, with reference to the transmission of the Journal, should be sent to the Secretary — Mr. Richard Bremridge,— 17, Bloomsbury Square, London.

Business communications—including advertisements, orders for copies of the Journal, and instructions from Subscribers respecting transmission of same—must be addressed to the Publishers, 5, Serle Street, Lincoln's Inn, London. Cheques and money orders should be made payable to "Street Brothers."

Sherry Wine.

Sir,—The paper by Mr. Lucas, published in last week's Journal, serves a useful purpose in drawing attention to the vague definition of sherry wine in the British Pharmacopœia. He is undoubtedly correct in his conclusion that the percentage of 17 per cent. of alcohol there stated is intended to represent the proportion by weight of absolute alcohol, but it is unfortunate that in seeking information respecting the character of the sherry imported into this country, he does not appear to have obtained it from a trustworthy source. In the first place the rates of duty on wine are incorrectly stated, and they are really as follow:—

1. Wine containing not more than 30 per cent. of proof spirit, one shilling per gallon.

2. Wine containing over 30 per cent. and not more than 42 per cent. of proof spirit, half a crown a gallon.

These strengths expressed in terms of absolute alcohol correspond respectively to 13·87 and 19 44 per cent. instead of 12 and 17 per cent. as stated by Mr. Lucas.

Then again, except in the case of wine of high quality the extractive matter natural to the wine *plus* 13·87 per cent. of absolute alcohol would not be sufficient to keep the wine sound, and that is no doubt the reason why 17 per cent. of absolute alcohol is given in the British Pharmacopœia.

The suggested character No. 5 that the wine should not contain more than 4 per cent. of sugar is wrong, because wine containing even a lower percentage is not properly fermented, and when kept would either ferment or turn sour.

Character No. 6, suggested by Mr. Lucas, that "the wine should not yield by distillation more than 14 per cent. or less than 11 per cent. by weight of absolute alcohol," is also wrong, as such a sherry would not keep.

The difference in the rates of duty proves an incentive to shippers and their customers to bring in wine at the shilling duty up to 30 per cent. of proof spirit, but this wine is very seldom sold in bulk, on account of its low keeping qualities, but is mixed with more highly fortified wine.

Sometimes a preservative is added to keep it, but such unstable wine is not suitable for invalids, and ought not to be recommended as a B.P. sherry.

Mr. Lucas is quite wrong in his views in supposing that good wine containing 17 per cent. of absolute alcohol cannot be purchased as imported. This strength is common enough in the trade, and no doubt this fact led the late revisers of the B.P. to mention 17 per cent. as the ordinary typical strength of the sherry of commerce.

Such a wine is of far more stable composition than one containing from 11 to 14 per cent. absolute alcohol, as recommended by Mr. Lucas, and is better suited for pharmaceutical purposes.

London, November 9, 1896. Assay (63/39).

Sir,—In last week's Journal I should have given the Excise limit as: "Still wines containing less than 30° proof spirit pay 1*s.* gal. duty, but over 30° and under 42° proof spirit pay 2*s.* 6*d.* gal." This makes the percentage strength somewhat higher.

London, November 12, 1896. E. W. Lucas.

"The Aim of Preliminary Education."

Sir,—Anyone who knows enough of his mother tongue to be at all acquainted with its beauties and its virtues must feel heartily thankful to Mr. Brudenell Carter for his most opportune attempt to rekindle interest in such an important branch of preliminary education.

My object is now, by your kind permission, to point out a few general symptoms which show that in this affair as in many others the people most forward with adverse criticism are often those least qualified for the task.

"Custom" is no sufficient guide until it has received the seal of time and the undoubted authority of the best literary experts. The practice, therefore, of modern authors, and especially of modern statesmen, is of little worth except as suggestions of style. When there is found in the universally-accepted text-books—those of Adams, Angus, Latham, and Skeat—extracts from great writers as Coleridge, Newman, Gladstone, etc., held out as beacons to warn the student of very possible errors he may make, surely he ought not to readily quote these very writers as being good authority for certain innovations.

The straining-off the gnats and swallowing the camel-flies goes along very merrily on a question like this, where everyone thinks himself an authority, whilst really few understand the matter at all, and most would be best occupied in asking questions as earnest learners.

For example, when the matter was first started, an editor dealing with the subject in a leading article fell himself into one of the worst of blunders, by stating that something was different *to* something else, and in the same publication there occurred still more recently an almost verbatim report of a certain valedictory address, in which the author was severely scandalised by the insertion of a word coined on purpose for him instead of the one he actually used. Instead, that is, of "inertia" to indicate the absence of art, device, or action whatever, there got in somehow the queer importation "inertion" which, if it means anything, must mean the opposite of exertion and a totally different notion.

But, sir, a deal of confusion is often caused by inattention to the fact that some prepositional affixes have but one meaning, as "dis," "apart from"; and others have two, as "in," meaning sometimes "inside of" and at others "not." So with the prefix "re," as noted by one of your own correspondents, it does sometimes mean "again" or "twice," but not always; not in the word "religion" certainly, "religo" being to tie back, to hold back within, so to speak, one's own proper circumference of duty, honour, reverence, so as to be kept from flying off into the confusion and darkness and evil outside.

39, *Church Street, Maryl bone, N.W.*, J. C. Hyslop.
November 9, 1896.

Caffeine as a Base.

Sir,—The fact that caffeine gives a precipitate with potassium bismuth iodide solution, has been known to me (as also to many others) for some time, so that Mr. Marshall's discovery is not original. I would refer your correspondent to page 84 of the sixth edition of Muter's 'Manual of Analytical Chemistry,' where he will find it stated that "potassium bismuthous iodide solution" gives "a precipitate with all official alkaloids," thus including caffeine. In his letter of last week, the writer terms the reagent "potassio-bismuthic iodide," whilst in the book above mentioned it is given as "potassium bismuthous iodide" with formula—

Liquor bismuthi	43 C c.
Potassium iodide	9 Gm.
Acid hydroch. fort	9 C.c.

As a point of nomenclature, which is the correct term? I opine the latter. Although antipyrine and caffeine behave somewhat similarly when treated with Mayer's reagent and with potassio-bismuthous iodide, yet I agree with Mr. Marshall that the insertion of the "positive" and "negative" tests for caffeine in the forthcoming Pharmacopœia would be of advantage.

Plymouth, November 8, 1896. John R. Johnson.

Sir,—Mr. Marshall points out the non-precipitation of caffeine by Mayer's reagent, also its red precipitation with Thresh's reagent. The first-mentioned negative test is very distinctive, but the second is a group reagent. Your contributor may be interested to know of a positive reagent for caffeine—I refer to Delff's, which gives an amorphous precipitate with other alkaloids, but an acicular crystalline structure with caffeine. Delff's is a solution of potassium iodide saturated with hyd. oxid. rub.

November 9, 1896. Pharm. (63/35).

A Correction.

Sir—In your last issue, at the end of my address, I am reported to have said, "The Birmingham Council would do their portion of the work," etc. What I said was: "Our Pharmaceutical Council would, I felt sure, do their portion of the work," etc., meaning the Pharmaceutical Council of Great Britain, as they would be the proper authority to bring in an amended Pharmacy Act, and not a local association. I should be obliged if you would correct that point.

Wolverhampton, November 7, 1896. F. J. Gibson,
President of the Midland Pharmaceutical Association.

White Precipitate and Resorcin Ointment.

Sir,—I think Mr. Robinson went needlessly out of his way in order to produce a blue ointment with the above, as described in the Journal of last week. I should be sorry to think that any dispenser would do as described in order to produce an ointment which can be made to appear quite as "elegant" (I wish Mr. Carter had vetoed that word as sometimes applied to pharmacy) when made with the ingredients as they stand. If we are to look out each time a suitable solvent for every powder we wish to incorporate into an ointment, then truly our customers will be sorely puzzled by our different productions. He says that rubbing down gives a good ointment. Why do more?

Southport, November 10, 1896. H. R. (63/31).

Lin. Potass. Iodid. c. Sapone.

Sir,—Possibly the following suggestion may have been made before, but at all events I have not come across it. I have always taken the liberty of making a slight alteration in the directions to be found in the B.P. for making this so-called liniment. If, instead of a porcelain dish, a glass flask be used for the solution of the soap, all loss by evaporation will be avoided, and no difficulty will be experienced in preparing a cream-like product, which becomes solid after the lapse of a day or two. If this be preserved in a wide-mouthed glass bottle, it will keep its colour for months.

London, November 6, 1896. Pharmacist (62/37).

A number of Answers to Queries are unavoidably held over until next week.

PUBLICATIONS RECEIVED.

The Sweating of the Medical Profession by the Friendly Societies in Australasia. By Ludwig Bruck. Pp. 60. Price 1s. Sydney: L. Bruck, Medical Publisher, 15, Castlereagh Street. London: Baillière, Tindall and Cox. 1896. From the Publishers.

Semi-Annual Report of Schimmel and Co. English Edition. Pp. 104. Fritzsche Brothers, Leipzig and New York. October, 1896.

OBITUARY.

Honeyman.—On October 14, Edmund Honeyman, chemist and druggist, of Byker. Aged 27.

Stevens.—On October 18, James Stevens, chemist and druggist, of Strood. Aged 60.

Nicol.—On October 28, William Nicol, chemist and druggist, of East Linton, N.B. Aged 52.

Foster.—On October 29, Robert D. Foster, chemist and druggist, of Burford.

Jeremy.—On November 3, David Jeremy, chemist and druggist, late of Carmarthenshire. Aged 54.

Thomas.—On November 7, Harry Alma Thomas, pharmaceutical chemist, Gracechurch Street, London. Aged 42. Mr. Thomas was well known in metropolitan circles, having for some years acted as honorary secretary to the Chemists' Ball Committee, and his death will come as a great shock to his numerous friends.

Porter.—On November 8, John Porter, chemist and druggist, of Coalville. Aged 69.

Communications, Letters, etc., have been received from Messrs. Andrews, Anning, Atkins, Austen, Bartlett, Bayley, Bell, Bindloss, Bingley, Birkbeck, Brown, Butler, Clague, Clark, Cracknell, Daniel, Daubeny, Donald, Elliot, Firth, Gibson, Goodall, Grace, Hallaway, Hardy, Harris, Henry, Hill, Hodsoll, Hopkins, Hyslop, Idris, Johnson, Kemp, King, Kirkpatrick, Larder, Lincoine, Marson, McKellar, Moss, Nicholls, Oliver, Pollitt, Powell, Reid, Reynolds, Roberts, Robertson, Umney, Waddington, Walker, Ward, Wiggins.

ROYAL COLLEGE OF SURGEONS 20 NOV 25

PILOCARPINE HYDROCHLORIDE.

BY DR. B. H. PAUL AND A. J. COWNLEY.

In the last issue of the Pharmacopœia of the United States of America an addition was made to the characters of this salt by giving the melting point as 197° C., and an American journal has recently expressed the opinion that an observation of the melting point is the best means of ascertaining the purity of the salt met with in commerce. It might therefore be inferred that the hydrochloride has in that respect an advantage over the nitrate, some samples of which we have shown differ considerably in the melting point. The question, however, is not so much as to the purity of any particular salt, but whether the alkaloid obtained from jaborandi consists of more than one chemical individual. The results already described by us* point to the probability that the salts met with in commerce under the name of pilocarpine nitrate do contain more than one base, and there is consequently some uncertainty as to which of those bases has the medicinal action peculiar to jaborandi.

A similar want of homogeneity might be expected to obtain with the hydrochloride and other pilocarpine salts.

In examining some samples of pilocarpine hydrochloride as to the melting point, we have found that this salt gives indications of being a mixture of more than one chemical compound. Taking the melting point in a Roth apparatus, we found that two different temperatures might be read as the melting point, one at which the substance in the capillary tube first showed signs of partial liquefaction, and a higher point, at which the contents of the tube became entirely liquid. The results obtained with two samples of pilocarpine hydrochloride are given in the following table:—

Sample.	Began to Run.	Clear Liquid.
A	192°·7	196°·7
B	192°·2	196° 7

This behaviour appears to point to the probable presence of two substances in both of the samples, judging from the partial melting at the lower temperature, and the way the salt becomes a clear liquid at a point about four degrees higher.

For one of these samples of pilocarpine hydrochloride we are indebted to Messrs. Domeier, who were good enough to procure it specially from the makers, Messrs. C. F. Boehringer and Sons. At the same time they sent an account of the result of some pharmacological examinations they have had made in consequence of the statement as to abnormal action of pilocarpine salts.† They have found that a salt of high melting does not differ in its action from the one of low melting point which can be separated by purification — presumably fractional re-crystallisation. In regard to the medicinal use of pilocarpine salts this result would appear to show that the possible presence of two substances is, from that point of view, a matter of no account, but, at the same time, it would do away with the value of the melting point test as a criterion of the qualities of pilocarpine salts.

In reference to the abnormal action of pilocarpine salts analogous to that of atropine, Messrs. Boehringer suggest that it may probably be due to the presence of jaborine, but as the existence of that base is somewhat questionable, such a mode of explanation would require to be supported by more definite proof than is at present available.

* *Pharm. Journ.*, *ante* p. 1.
† *Ibid.*, p. 2.

BOTANIC GARDENS OF THE WORLD.

IV.—CHISWICK.

The garden at Chiswick, which next to that of Kew has most enriched our botanic gardens with foreign plants, is a development of two small experimental gardens established by the Royal Horticultural Society in 1818, with the view of practically testing therein the value of flowers, fruits, shrubs, and trees that promised to be desirable horticulturally or economically important to British commerce.

The Royal Horticultural Society originated at the beginni g of the present century through a letter addressed to William Forsyth, a pupil of Philip Miller and Superintendent of the Royal Gardens at St. James's and Kensington. John Wedgewood, son of the inventor of the Wedgewood pottery, and Thomas Andrew Knight, the celebrated vegetable physiologist, the writers of this letter, must therefore be regarded as the founders of this Society. It was organised at the house of Mr. Hatchard, the Piccadilly publisher. Among the original members were its founders, Forsyth, Banks, and Aiton. A Royal Charter was granted to the Society by George III. in 1809, and in 1810 it began to issue its 'Transactions,' which have been of the greatest service to horticulture.

The garden at Chiswick was obtained in 1822 on a lease from the Duke of Devonshire, an enthusiastic supporter of the Society, who subsequently became its President.

Four years before this garden was started, the Society extended its field of operations by adopting the Kew plan of sending out collectors to foreign countries. One of the earliest of these was John Reeves, whose original plant of *Wistaria sinensis* is still growing at Chiswick. He was born in 1774, and in 1808 became an inspector of tea in the service of the East India Company. Subsequently he was made chief inspector of tea in the East India Company's establishment at Canton, and sent home to the Royal Horticultural Society a vast number of plants discovered by him in China. In 1817 he became a Fellow of the Royal and Linnean Societies. He published in the *Transactions of the Medical Botanical Society*, 1828, "An Account of some of the Articles of the Materia Medica employed by the Chinese." About the same time the Society sent out four other collectors, Mr. Don, Mr. Forbes, Mr. Potts, and Mr. Damper Parks.

George Don was the eldest son of George Don, for some time curator of the Royal Botanic Garden at Edinburgh. He was at one time employed in the Chelsea Physic Garden, and in 1821 was despatched to Brazil, the West Indies, and Sierra Leone as collector for the Royal Horticultural Society. He sailed in the *Iphigenia* under Captain Sabine. Don's new discoveries were described in the *Transactions of the Society*. In 1822 he was made an Associate, and in 1831 a Fellow of the Linnean Society. His chief work was 'A General System of Gardening and Botany,' founded upon Miller's 'Gardener's Dictionary,' 1832–1838. Besides furnishing the Linnean arrangement to Loudon's 'Hortus Britannicus,' he published in the *Edinburgh Philosophical Journal* for 1824 an "Account of Several New Species from Sierra Leone"; in the *Wernerian Society's Memoirs*, 1826–1831, "A Monograph of the Genus *Allium*"; and in the *Linnean Society's Transactions* for 1826 "A Review of the Genus *Combietum*."

John Forbes, 1799–1823, had been a pupil at the Liverpool Botanic Garden. In 1822 the Royal Horticultural Society despatched him to the east coast of Tropical Africa in an expedition commanded by Captain William Owen. After sending home a considerable number of specimens from Madeira, Rio, the Cape, and Madagascar, he determined to march up the Zambesi to the Portuguese

station Zumbo, 300 leagues from the mouth of the river, and thence southwards to the Cape, but he succumbed to fatigue and privation at Sennain, August, 1823, before accomplishing half the distance. The genus *Forbesia* commemorates him.

Mr. Potts and Mr. Damper Parks took up the work of Reeves in the East Indies and China, sending home many new and valuable plants.

One of the Society's most valued collectors was Robert Douglas, sent out to North America in 1823. Born at Scone in 1798, he attracted the attention of Hooker while at the Botanical Garden of Glasgow, and accompanied him in a Highland tour. He was sent out by the Royal Horticultural Society in 1823 to examine the flora of North America, and sent home to Chiswick a very large collection of fruit trees for trial. His exploration of Oregon and the territory of British Columbia undertaken in the following year was even more successful, resulting in the introduction of a large number of pines, shrubs, and flowers. We owe to him *Pinus Lambertiana*, *P. insignis*, *P. ponderosa*, *P. contorta*, *Sabiniana*, and *P. monticola*; amongst the *Piceas*, *P. bracteata*, *P. nobilis*, *P. amabilis*, and *P. grandis*, also *Abies Menzeisii* and *A. Douglasii*, *Ceanothsus* and the flowering currant, new *Gilias*, *Gaillardias*, *Godetias*, *Clarkias*, *Collinsias*, *Lupines*, *Pentstemons*, *Mimulus*, and *Escholtzias* were also introduced by Douglas. The Californian vulture and sheep first became known in this country through him. In 1827, he crossed the Rocky Mountains and reached Hudson's Bay, where he met Sir John Franklin, the Arctic explorer, returning to England with him. Douglas was made a Fellow of the Linnean, Geological' and Zoological Societies, to whose transactions with those of the Royal Geographical Society he contributed occasional papers. In January, 1828, Lindley dedicated to him the genus *Douglasia* among the natural order *Primulaceæ*. He sailed on his last journey in the autumn of 1829, and passed the greater part of the next three years in California. From 1832 to 1834 he was on the Fraser River. Whilst on a visit to the Sandwich Islands in the summer of 1834, he fell into a pitfall, July 12, and was gored to death by a wild bull. His dried plants were divided between the Hookerian and Bentham herbarium at Kew, the Lindley herbarium at Cambridge, and the herbarium of the Linnean Society.

At home the Society gave its attention to the progress of horticulture, making extensive collections of plants in its garden with a view to the elimination of poor varieties, and the improvement of the remainder. Thus in 1823, as many as twelve hundred varieties of rose plants were gathered together at the garden at Chiswick, and to this collection in conjunction with the Society's importations from China we owe the modern Rosarium. Experiments were also continuously made as to the best methods of cultivation, and the journal of the Society was commenced about this time.

In 1837, Mr. Hartweg was sent out to America by the Society to collect in Mexico, Guatemala, and Peru. Subsequently he went to California. He sent home to the Society a large number of new plants, among them several new pine trees, some very fine berberries, several lupines, all the *Achimenes*, and a great many new orchids.

In 1842, the Society undertook another important enterprise, sending out Robert Fortune to China with a large quantity of plants and seeds of European fruits, vegetables, and flowers for distribution among the Chinese. These importations have proved of considerable benefit to the people of Northern China. Born at Kelloe in Berwickshire in 1813, Fortune entered the Botanical Gardens of Edinburgh, and subsequently became Superintendent of the Indoor Plant Department in the Royal Horticultural Society's Garden at Chiswick. The expedition undertaken by him in 1842 was of great value to horticulture, resulting as it did in the introduction of the tree pæony, the "Chusan Daisy" (the parent of all our garden chrysanthemums), the Japanese anemone, *Weigela rosea*, *Dielytra* and *Citrus japonica*. Whilst engaged in the Company's service in China, Mr. Fortune made observations and reported on the growth and cultivation of the tea plant, and he subsequently went to India with a view to the introduction of the tea shrub into that country. As soon as his engagement to collect for the Society was at an end, the East India Company arranged with him to make some experiments with the tea plant in the North-West Provinces of India. These experiments were successful, and laid the foundation of tea growing in India and Ceylon. He paid several visits to Japan, introducing from that country *Kerria japonica*, *Aucuba japonica*, *Lilium auratum*, and the golden larch. He published in 1847 'Three Years' Wanderings in the Northern Provinces of China, with an Account of the Agriculture and Horticulture of the Chinese'; in 1851 'A Report upon the Tea Plantations in the North-West Provinces'; in 1852 'A Journey to the Tea Countries of China'; in 1857 'A Residence among the Chinese'; in 1863 'Yeddo and Peking.'

The numerous foreign expeditions sent out by the Society, the expenses resulting from the cultivation of the new plants introduced, and its magnificent but costly publications, caused the Society to greatly exceed its annual income. The years 1850-1860 were consequently a time of great financial difficulty, and it was thought at one time that the work of the Society would have to be given up.

In 1858, however, the Prince Consort became President of the Society, and resolved to secure to the country the benefits conferred upon it by the Society. In 1859 he proposed that the Commissioners of the Great Exhibition of 1851 should be co-operated with, and the Society established on the South Kensington estate, belonging to the Commissioners. The magnificent South Kensington conservatory and gardens were opened by the Queen in 1861, but the cost of making and keeping up these gardens was so great that it entailed on the Society a debt of nearly a hundred thousand pounds. With the death of the Prince Consort in 1861, the Commissioners inaugurated a series of exhibitions, which flooded the Gardens with such crowds of pleasure-seekers that the original purpose of the Society began to be lost sight of. From 1862 to 1887 was a period of general decadence for the Royal Horticultural Society.

In 1887 the Commissioners brought things to a crisis by, under the debt arrangement, taking possession of the Society's Garden and Conservatory, and assigning the land to the other purposes. This was in the end a distinct benefit to the Society. The Fellows who cared only for its semi-private grounds fell away, and those really interested in horticulture re-organised the Society.

For the Society's fortnightly meetings and exhibitions of flowers, fruits, and vegetables, a temporary hall was found in the Drill Hall of the London Scottish Volunteers in James' Street, Westminster. A large room for the fine Lindley library was found at 117, Victoria Street. The publication of the Society's transactions was resumed in the journal, now issued quarterly. Last, but not least, the experimental gardens at Chelsea, which had fallen into disrepair and disuse, have been placed on a new footing and are now again available for trying new introductions and testing the merits of new varieties of garden plants and trees. The Society has returned to the objects of its original purposes: "The improvement both in quantity and quality of the food and floral productions of our country, the circulation of such information gathered from actual experience and trial as may lead to the practical advancement of Gardening, Orcharding, Forestry, etc., the introduction and acclimatisation of such new plants as may promise to have an economic value in the trade of this country or of its colonies."

Amongst the many distinguished names associated with the

Royal Horticultural Society and its gardens the most illustrious are those of the great vegetable physiologists, Knight, Lindley, and Bentham.

Thomas Andrew Knight, 1759–1838, first became known through his experiments at Elton, where he raised many new varieties of fruits and vegetables. In 1795 he read before the Royal Society some papers on "Grafting and the Inheritance of Disease Among Fruit Trees." He took a large share in the founding of the Royal Horticultural Society, was its President from 1811 till his death, and contributed to every part of its *Transactions* issued during his lifetime, from the time of their first publication in 1807. In 1805 he was elected a Fellow of the Royal Society, and received the Copley medal from the Society in 1806. In 1836 he was awarded the first Knightian medal of the Royal Horticultural Society, bearing his own portrait by Wyon and founded in his honour. Knight was the first to show by experiment that the vertical growth of roots and primary stems is due to gravitation; he showed that the tendrils of *Vitis* and *Ampelopsis* are negatively heliotropical, and made serviceable experiments on the growth in thickness of trees. In horticulture he raised new varieties of apples, cherries, strawberries, plums, nectarines, pears, potatoes, cabbages, and peas, many of which bear his name. A genus of *Proteaceæ* was called after him by Robert Brown. Knight's chief works were a treatise on the "Culture of the Apple and Pear," 1797, and "*Pomona Herefordensis*." A selection from his physiological and horticultural papers read before the Royal and Horticultural Societies was published in 1841. It was edited by Bentham and Lindley, and contains a life by Knight's daughter, Mrs. Acton, who helped him in his experiments, and was a skilful botanical draughtswoman.

John Lindley, 1799–1865, became assistant librarian to Banks, 1819, and in 1820 was elected a member of the Linnean Society. In 1821 he issued a monograph of the genus *Digitalis*. The next year he became Assistant Garden Secretary in the Royal Horticultural Society, and became sole assistant secretary four years later. In conjunction with Bentham he organised at Chiswick the first of the first flower shows in this country, and on Bentham's resignation in 1841 as Vice-Secretary he did practically nearly all the work of the Society till 1858. He took a prominent part in the International Exhibition of 1862. From 1822 to 1848 he contributed numerous reports to the *Transactions of the Horticultural Society* on new plants in the garden, accompanied by important physiological notes on double flowers, rate of growth, the action of frost, etc. From 1846 to 1855 he edited the Journal of the Society. His collection of orchids is preserved in the Kew Herbarium, the remainder of his herbarium at Cambridge. His portrait hangs in the rooms of the Royal Horticultural Society.

George Bentham from 1829 to 1840 was Honorary Secretary of the Horticultural Society, and together with Lindley named and described many of the new plants introduced by the Society's collectors. He raised the Society from "a state of debt and dissension" to a flourishing condition, both scientifically and financially.

PILOCARPINE HYDROCHLORIDE IN DIPHTHERIA.—Either with the alkaloidal salt alone, or, better, with a combination of antitoxic serum and pilocarpine, Barsky has obtained good results in a severe epidemic of diphtheria. The curative effects are attributed partly to the abundant salivation, which favours the softening and shedding of the false membrane, while the saliva is rendered acid and therefore unfavourable to the development of the growths; and partly to the increased perspiration and secretion of saliva, which help to eliminate the toxin; and also to the fact that pilocarpine gives rise to leucocytosis.—*Intern. Med. Mag.*, v., 472, after *Gaz. des Hopit.*

THE NEW MEXICAN PHARMACOPŒIA.

(*Concluded from page* 381.)

FLOR DE TUNA BLANCO.—The yellowish-white flower of *Opuntia tuna* are used as a pectoral. (They must not be confounded with those of Cactus grandiflorus.)

FLOROPONDIO.—The leaves of *Datura arborea* are employed like those of belladonna.

HABA DE SAN ANTONIO.—The seeds of *Cæsalpinia bonducella* are used as a tonic and antiperiodic. Bonducin, the active principle, is given in doses of 10 to 20 centigrammes, in which dose it is said to be as effective as quinine, according to Dr. Isnard.

HUELE DE NOCHE.—The leaves and fruits of *Cestrum nocturnum* (Solanaceæ) are employed. The leaves are sedative, the fruits anti-epileptic, but poisonous.

JICAMILLA.—The tubercular root of *Jatropha purgans* (?) is given in powder as an emetic and cathartic in doses of 2 grammes.

MANZANILLO.—"The seeds of *Hippomane mancinella*, taken in doses of 10 or 12, are a powerful diuretic," according to Dr. Record. Yet in the same paragraph the seeds are said to be a violent poison. This plant must not be confounded with *Manzanilla del pais* (*Matricaria chamomilla*) and *Manzanilla romana* (*Anthemis nobilis*), nor with *Manzanita* (*Arctostaphylos glauca*).

MOSTACILLA.—The herb and seeds of *Eruca sativa* are used as antiscorbutic and diuretic, also as a rubefacient less powerful than mustard.

NUEZ DE COLA.—Cola nuts are introduced as a heart tonic and for certain forms of dyspepsia.

NURITE.—*Calamintha macrostema* is given as a stomachic.

PALILLO.—An infusion of *Croton morifolius*, var. *sphærocarpus* is taken for gastralgia, and the tincture for facial neuralgia.

PANETE.—*Plumbago pulchella* contains in its stem and leaves a crystalline principle called plumbagin by its discoverer, Dr. F. Altamirano. According to Dr. Armendáriz, it is a polyphenol derivative of anthraquinone. Alkalies give it a rose-violet colour. The plant is considered to be antirheumatic and is used for toothache.

PARAISO.—The root bark of *Melia azedarach* is official as an emetic and anthelmintic.

RAIZ DEL OSO.—The root of *Valeriana ceratophylla* is used like ordinary valerian.

RETAMA DE ESCOBAS Ó'DELGADA.—*Spartium junceum* is said to possess diuretic, purgative, and emetic properties.

ROSA LAUREL.—The leaves of *Nerium oleander* are used as a cardiac tonic, but it is considered a dangerous remedy.

SIEGESBEQUIA.—The tincture of *Siegesbeckia orientalis* is used in diseases of the skin. It is not perhaps generally known that this plant can easily be grown in England in the open air.

TABAQUILLA OLOROSO.—This plant, *Heodeoma piperita*, is the peppermint of Mexico. The oil distilled from the plant is said by Professor Albarrán to yield 54·268 per cent. of menthol. It is stated to produce local anæsthesia.

TELONDILLA.—The rhizome of *Jatropha spathulata* is used as an astringent in diarrhœa.

TENCUANETE.—The seeds of *Euphorbia calyculata* yield 30 per cent. of a drying oil. Two drops of the oil are said to be sufficient to produce purging without colic. The milky juice is commonly used in poultices as a counter-irritant. It produces more or less irritation of the skin.

TLALOCOPETATE.—The plant, *Coriaria atropurpurea*, is said to be used as a stimulant to the respiration and circulation in cases of syncope or asphyxia caused by chloroform, coriarmyrtin having properties allied to strychnine.

THUJA.—The infusion and poultice made from the young leave

of *Thuja occidentalis* are used in rheumatism, and the tincture in doses of twenty drops per day is given for warts. It is also said to be emmenagogue.

XOCHIPIPILE.—The plant, *Lobelia laxiflora*, var. *angustifolia* is used like *Lobelia inflata*, than which it is stated to contain more lobeline.

The chemical products introduced into the Pharmacopœia are eighty-nine in number, and consist largely of synthetic remedies and modern chemical preparations. The names are so similar to those used in this country that very few need translation. They are the following:—Acetol, Acetato de aluminio, Acetona etilica, Acido agarico, Acido anìsico, Acido ósmico, Acido pirogálico, Acido sulforicínico, Acido trichloracetico, Aqua del manantial del Horno, Aqua del baño de San Pablo, Aqua sulfuroso del Rancho Colorado, Aqua salino-sulfurosa de San Bartolo, Aqua del manantial de los Baños, Aqua de la Laguna de la Magdalena, Aqua oxigenada, Alcanfor artificial, Alcohol amilico, Anilina, Anisato de sodio, Antiseptol, Apocodeina, Aristol, Arseniato de amonio neutro, Asaprol, Azul de metilena, Benzoato de bismuto básico, Benzoato de mercurio, Benzo-naftol, Benzozol, Betol, Bromuro de amonio, Bromuro de estroncio, Bromuro de oro, Cantaridato de potasio, Cantaridato de sodio, Chloralamido, Chlorhidrato de fenocola, Chlorhidrato de quinina neutro, Chlorhidrosulfato de quinina, Creolina, Cresilol, Crisarobina, Dermatol, Dujodoformo, Ergotinina, Eter nitroglicérico, Euforina, Eurofeno, Fluorino de sodio, Fosfato amoniaco magnesiana, Gayacol, Gayacol carboxilico, Gelatina animal, Glicerophosphato de calcio, Helenina, Heliotropina, Hemoglobina, Hidrastinina, Hioscina, Hipnal, Homatropina, Lactato de estronico, Lisol, Meconato de narceina, Naftol alfa, Napelina, Oleato de arsénico, Oleato de bismuto, Oleato de plata, Oleato de sodio, Oleato de cerio, Peptonato de fierro, Pioctaninos, Piperacidina, Sacarato de calceo, Sacarina, Salicilato de calcio, Salicilato de eserina, Salicilato de magnesio, Salicilato de mercurio, Salipirina, Salofeno, Somnal, Sozoyodol de potasa, Sozoyodol de sosa, Tanato de pelietierina, Tiol, Yoduro de estronico.

The above names differ little from English, except where the "y" is changed into "i," as in Lysol, Hypnal, Hyoscine, etc., and Thiol, in which the "h" is omitted. The most remarkable introduction is perhaps the artificial camphor, the uses and doses of which are not given. The pharmaceutical preparations include the following:—Aceite (oil) de Chaulmugra, Acido sulfurico alcoholizado, Acido sulphurico aromatico, Aqua sterilizada, Algodones (cotton) antisepticos, Antikamnia, Cerato vaselinado, Diuretina, Elixir de diastasa, Elixir de papaina, Elixir de pepsina, Elixir de peptona, Emulsion de bacalao (cod-liver oil), Extracto de estrofanto, Extracto de kola, Extracto de lirio de los valles, Extractos fluidos, Gazas (gauze) antisépticas, Glicerinas antisépticas, Gliconina, Injecciones hipodérmicas, Jarabe (syrup) de fosforglicerato, Jarabe de fresa (strawberries), Jarabe de Gibert (iodide of mercury and potassium), Jarabe de percloruro de fierro, Lactopeptona, Lanolina, Lápices de mentol, Lociones antisépticas, Magnesia anisada, Morruol, Pastillas comprimidas, Pastillas de salol, Pastillas de cocaina, Pastillas de sulfonal, Pomadas antisépticas, Reactivos, Soluciones normales, Solutiones antisépticas, Soluciones glicero-alcohólicas, Sucro artificial, Tamices, Traumaticina, Vinaigre aromático, Vino de diastasa, Vino de kola, Vino de papaina, Vino de pepsina, Vino de pepsina diastasado, Vino de peptona.

The following articles have been altered to some extent:—Aceite alcanforado, Aceite de cicuta, Aceite de estramonio compuesto, Aceite de beleño (henbane), Aqua de alquitrán (tar), Alcohol alcanforado, Capsulas medicinales, Cold cream, Colodion cantaridato, Colodion morfinado, Emplasto adhesivo, Emplastos varios, Espenes, Eter acetico, Extractos, Extracto de opio, Extracto de quina, Glicerados, Grajèas (Dragées), Jarabes, Jarabe de acónito, Jarabe atemperante, Jarabe balsamico, Jarabe de belladonna, Jarabe de corteza de naranja, Jarabe de crameria, Jarabe de eter, Jarabe de quina, Jarabe de yoduro de fierro, Láudano de Sydenham, Pastillas, Poción blanca de Sydenham, Polvos, Tinturas alcohólicas, Vinagres, Vinos, Unguentos. In all 195 new articles have been added to the pharmacopœia, and some electuaries, plasters, and ointments omitted.

One index only is given, instead of several, as in the last edition. It should be observed that words beginning with "Ch" are arranged separately after "C," as if it represented the Greek χ, which can hardly be the case with Mexican names. It is remarkable also to see only one entry under the letter N.

It cannot be said that the Mexican Pharmacopœia is not up to date as regards new remedies. With regard to the number of remedies included in it there is probably no other country in the world that includes so large a list in the Pharmacopœia, and the druggist who keeps them all in stock would need a larger course of education than obtains in this country to be familiar with all of them.

In a very few cases the information given under the various articles is not quite so recent as it might be, as, for instance, *Aloe socotrina* is said to yield socotrine and hepatic aloes. As a rule, however, great care has been exercised in making it as correct as possible. Indeed, the whole work produces the impression that Mexican physicians and pharmacists keep well ahead of scientific literature.

THE DEVELOPMENT OF PHOTOMICROGRAPHIC NEGATIVES.

BY DR. W. C. BORDEN, F.R.M.S.

The development of the exposed plate is one of the most important steps in the photomicrographic process. However well the illumination may be arranged and however carefully the adjustments and exposure may have been made, the process will fail of successful or perfect result by poor or imperfect development of the latent image.

In almost all photomicrographic work contrast has to be sought for and next after detail and sharpness, or rather in conjunction with them, contrast is necessary in the negative to give a print having the requisite clearness.

To obtain detail a proper objective must be combined with suitable substage illumination. The light must be accurately focussed on the object by the substage condenser, and the aperture of the latter must bear proper relation to the aperture of the objective. With detail obtained, sharpness is had by not extending the angle of light from the substage condenser beyond a degree necessary to show the detail and by accurately focussing the image on the camera screen.

In addition, a suitable plate must be used, and, if necessary, a light filter of a colour complimentary to that of the object, provided the latter is coloured, as are histological or pathological sections or stained bacteria. Orthochromatic plates only are suitable for photomicrography. Of these I have obtained best results with the Cramer rapid "Isochromatic." These plates when properly developed give excellent contrast and gradation.

Of the different reducing agents hydroquinone, either alone or combined with eikonogen or metol, preferably the latter, is best for bringing out the latent image. Hydroquinone is slow in action, but has the quality of producing clearness and contrast. Metol is more rapid, and when used with hydroquinone starts the development and brings out the detail quickly—density being gained afterward

by the combined action of it and the hydroquinone. A most important element in a formula for photomicrographic development is potassium bromide. This salt has the quality of preventing chemical fog, of somewhat restraining development, and of causing the details to appear in the relative order in which they have been produced by light intensity. With no potassium bromide and with a developer reasonably strong in alkali, all parts of the image, even those least impressed by light, appear practically together. With bromide added, this action may be modified from slight to a great retardation of the less impressed parts according to the amount of the bromide introduced. Practically, about one-half grain to the ounce of mixed developer is sufficient to restrain development, to cause the gradations to appear in proper order, and to prevent chemical fog even during prolonged development.

The complete formula is as follows:—

No. 1.	Water, hot, distilled or boiled	250 C.c.
	Sodium Sulphite	200 grammes.
	Potassium Bromide	0·5 ,,
	Hydroquinone	1·5 ,,
	Metol	1·5 ,,

Cool before using.

No. 2.	Sodium Carbonate	15 grammes.
	Water	250 C.c.

Use equal parts of No. 1 and No. 2.

Development should proceed slowly and gradually, and should be continued until sufficient density is obtained. Frequently all the detail appears while the plate is still quite thin and the novice is apt to fear a flat plate and remove it from the developer before development is completed. This is to be avoided, for density is necessary, and if after it is obtained the fixed plate has the parts clogged which should be clear, the exposure has been too long, and another should be made. A thin plate, in photomicrography, after prolonged development generally means under exposure, even if all details are present.

The image should not appear too quickly after the developer has been applied. Frequently with objects of little contrast the exposure has to be shortened as much as possible in order that contrast may be obtained, and in such cases the image may not appear for a minute or two and development may have to be prolonged for fifteen or twenty minutes. A small box with an easily removable cover which will exclude all light should always be at hand on the developing table. In this the developing tray may be placed and left for some time in case of slow development. This allows the operator to leave the developing room and proceed with other work, or make another exposure, while development is going on. A cardboard or other cover for the developing tray should be at hand to place over the tray during the development of orthochromatic plates, for they are somewhat sensitive to ruby light, and should be guarded from it as much as possible during development. It is best to place them in the tray and flow the developer over them at some distance from the light, then cover them and not examine or expose them to the light longer, or more frequently, than necessary.

For a dark room light, an artificial one is best as it is always of equal intensity and is available at all times, night or day. The Carbutt "Multum in Parvo" lantern is excellent, as it furnishes abundant light and has two side doors, one opening directly to the lamp by which contact lantern slide exposures may be made, and another having an opal glass which is excellent for examining the fixed negative.

For a fixing solution, a plain solution of sodium hyposulphite in water answers well, but one having chrome alum as an ingredient is better. Carbutt's formula is a most excellent one. It appears to have a slight clearing action, due probably to its removing staining if present; and as it hardens the film, the negative is easier to handle, particularly during warm weather. Its composition is as follows:—

Sulphuric Acid	2 C.c.
Sodium Hyposulphite	240 grammes.
Sodium Sulphite	30 ,,
Chrome Alum	15 ,,
Water	1000 C.c.

This fixing bath keeps well and may be used repeatedly.

After thorough fixing, washing, and drying, the process is completed so far as the negative is concerned, except in a few special cases where reduction or intensification is required. These processes should be avoided whenever possible, and should only be necessary in the case of objects especially difficult to photograph. It is frequently the case that a first exposure does not give an entirely satisfactory negative. When this occurs, instead of attempting to better the poor negative by reduction or intensification, another exposure should be made of shorter or longer duration as indicated by the first negative, and a better or perfect result can thus usually be obtained. With some difficult subjects, however, no attention to exposure or subsequent careful development will give a negative of proper contrast for printing purposes. This is the case with objects having but little contrast between their different parts, or those coloured objects in which the colouring is so faint that they fail to absorb a sufficient number of the impinging rays, and consequently transmit so many that there is nearly as much effect produced on the plate by the rays that pass through them as by those which pass by them.

To photograph such objects it is necessary to make a short exposure and to stop the development as soon as the details appear and before any trace of a reduction of the silver compounds appear in those places which should appear clear in the negative, and, after fixing and washing, to intensify the negative so that sufficient contrast may be had for printing. Of the various intensifying methods that by bichloride of mercury and aqua ammoniæ is the best. The fixed and thoroughly washed plate is placed in an aqueous saturated solution of bichloride of mercury until sufficient density is obtained, then thoroughly washed to remove every trace of bichloride, after which it is placed in dilute aqua ammoniæ to blacken, and again thoroughly washed.

While in the bichloride, density is best judged by viewing the plate by transmitted light, remembering that the plates will be somewhat denser after passing through the ammoniæ solution. The strength of the ammoniæ solution does not matter materially. Where the action of the bichloride has been prolonged it is necessary to use very strong aqua ammoniæ to blacken the plate entirely.

In some cases reduction of a too dense negative may be required, or it may be necessary to reduce a negative in order to clear it before intensification. This is best done by placing the plate in a solution of sodium hyposulphite of ordinary strength to which a few grains of potassium ferricyanide have been recently added. The rapidity of the reduction depends upon the amount of ferricyanide, and the plate must be carefully watched during the process that the reduction may not be carried too far. By reduction, or intensification, or by employing both one after the other, a negative may sometimes be obtained from an object so difficult that the simple process of exposure and development will not suffice. But these processes should only be resorted to when strictly indicated, and after different lengths of exposure and careful adjustment of the substage illumination have failed to give the required result.

In photomicrography arrangement of the light and adjustment of the substage condensers are of primary importance, and unless the details of their arrangement are mastered, no attention to development, or subsequent doctoring of the negatives, will give good results. But with these understood, the limit of their effectiveness will be known, and when this is reached the chemistry of the photographic process may be resorted to with profit.—*American Monthly Microscopical Journal.*

MODERN SOAP-MAKING.

THE production of soap, by heating fat or oil with alkali, is a branch of chemical industry that has been carried on from a very remote period. But until the early part of the present century "soap-boiling" was a purely empirical art, carried on by rule of thumb. Experience had taught the necessity of using causticised alkali and maintaining certain proportions of the materials used for the purpose, but little was known as to the chemical nature of oil or fat, or of the changes they undergo in the process of saponification, and the tongue of the workman was the only means available for ascertaining the requisite neutrality of the product obtained. A number of important facts relating to saponification had been observed by Geoffroy, Macquer, Scheele, Fremy, and others, but their significance was not recognised until the publication of Chevreul's researches, between 1811 and 1823, made known the chemical nature of the various kinds of fixed oil and fat. Subsequent investigation has furnished more detailed knowledge of this subject without materially altering the general view put forward by Chevreul. Some of the technical terms still employed in connection with soap making are relics of its primitive condition; but the methods of working have undergone considerable improvement in various ways, and, at the

FIG. 1.—VIEW OF SOAP WORKS.

present time there are few branches of industry in which the principles of chemical science are capable of being usefully applied more fully than in the operations of a soap factory.

The particular factory that is the subject of description in this article is situated at Wapping, and was established by Messrs. Paton and Charles in the year 1785. The soap works now cover about an acre and a half of ground, while an equal area adjoining them is devoted to storage and stabling. These works are now carried on by Messrs. D. and W. Gibbs, Ltd., of the City Soap Works London, whose original premises were destroyed by fire some few years since, after having been the seat of their business since the early part of the last century. Some of the buildings are several storeys in height, and are so arranged that all the raw materials employed are taken in at one side to an upper floor, where they are prepared for use and thence pass downwards in the successive stages of treatment to the street level. Within recent years important improvements have been made in the works, involving extensive alterations and additions to meet the increasing requirements of the business.

BOILER HOUSE.

In a factory of this kind where enormous quantities of material are operated upon, a very considerable amount of motive power is

FIG. 2.—BOILER HOUSE.

required, and to meet that necessity the works have been provided with large steam boilers and engines, the waste steam being further utilised in heating the pipes of the drying rooms. In other operations, where heat is required, it is supplied by means of steam generated in the boilers and conveyed by pipes to the vessels to be heated. Formerly, heating was effected by naked fires in furnaces, but in modern soap factories the use of steam for this purpose has been found safer and more convenient. Fig. 2 represents the boiler house at Messrs. Gibbs' Works, fitted with seven Cornish boilers, of from 40 to 60 horse-power, and arranged in two rows, with an intervening space for firing.

SOAP-MAKING MATERIALS.

These consist of tallow or oil for the finer kinds of soap, and for soap of a commoner kind grease from bones, etc., is used together

FIG. 3.—SOAP-BOILING COPPERS.

with some proportion of rosin. The alkali now used in making soap-boiler's lye is either soda ash, which has to be rendered caustic by treatment with lime, or in some instances caustic soda that is now made in large quantity at alkali works. Both materials are used by Messrs. Gibbs, and in causticising soda ash they employ lime made by another branch of the firm at the cement works of Gibbs and Co., Ltd., in Essex. The production of caustic soda at alkali works and the greater purity of the soda ash made by the Le Blanc process as compared with the barilla formerly used in soap-making have contributed

largely to the improvement that has been made in all kinds of soap, but it is curious that, in the case of what is termed "mottled soap," long-continued familiarity with characters that were chiefly a consequence of the impurity of the materials formerly employed in the manufacture should have led to the artificial imitation of those characters when they are no longer unavoidable.

Soap-Boiling.

This operation is conducted in large cylindrical vessels set in brickwork, each fitted with a coil of steam-pipes for heating the contents. These vessels are technically termed "coppers," and some of them have a capacity sufficient for working a hundred tons of material. They are arranged in series, as shown in Fig. 3, with various appliances for charging and working. At Messrs. Gibbs' Works there are fourteen of these large coppers, besides several smaller ones, and they are so situated that the materials used in the operation are run into them from an upper floor, while the spent lye can be run off to a floor below. The operation of "soap-boiling" in one of these coppers occupies several days, during which time its progress has to be watched and regulated. Here the process of saponification is effected by the reaction of the alkali and fat or oil used. At first weak lye is used, and by the mechanical action of steam injected into the the copper, the lye is intimately mixed with the fat, forming a kind of emulsion. This intermixture facilitates saponification, and after the boiling has been continued for some time the contents of the copper become neutral and homogeneous, consisting then of soap mixed with glycerin and water and a small proportion of unaltered fat. On adding to this mixture sufficient common salt to form brine, in which soap is insoluble, separation is effected, the soap being thrown out in a granular state from the salt solution which retains the glycerin. After drawing off the watery liquor formed by "salting out," the soap is again boiled with water and sufficient alkaline lye to ensure complete saponification of any unaltered fat and the presence of alkali in excess. This treatment is again repeated and in the third stage of the boiling operation the contents of the copper are left at rest for several days to allow the soap to separate gradually and collect as a layer on the surface of the residual lye, which retains various separated impurities and is technically termed "nigre." This is drawn off from the copper by a pipe at the bottom and passed to another part of the works.

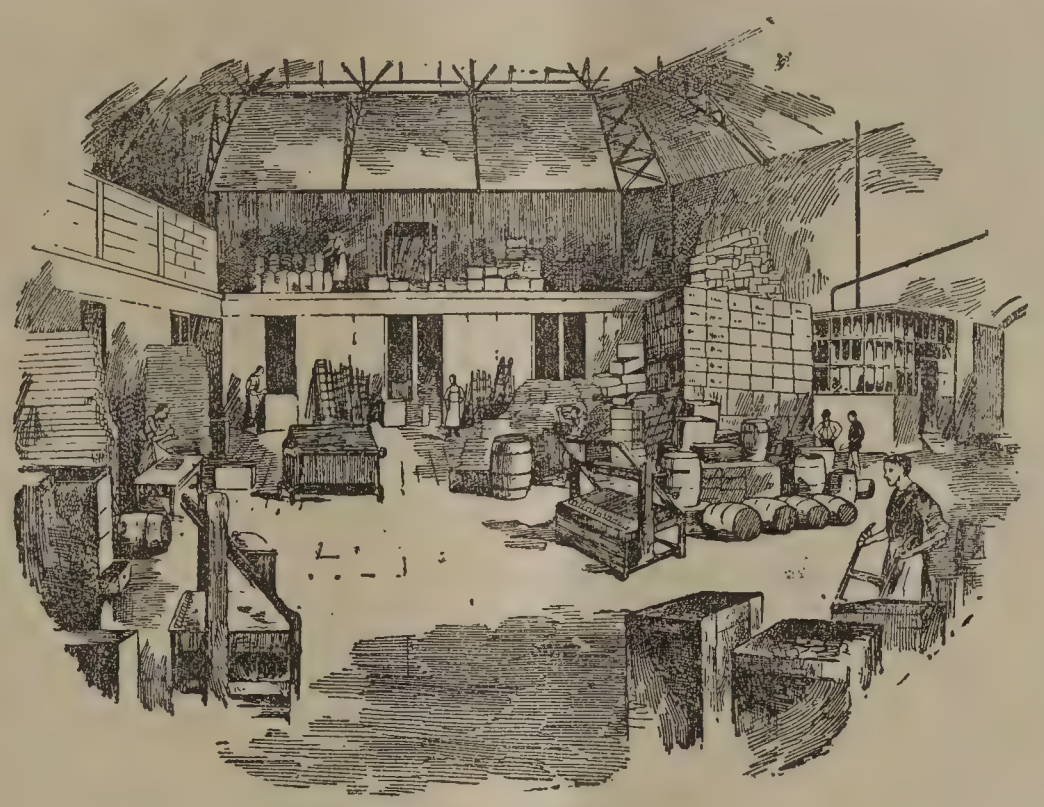


Fig. 4.—Cutting Room.

When the soap is ready to be removed from the copper it is transferred to a number of rectangular moulds, termed "frames," the sides of which are held together by bolts while the soap is cooling, and can be removed when the soap has become sufficiently hard to admit of the block being taken out and cut up into slabs. These slabs are again cut up into bars in a cutting machine called a "piano." Two of these cutting machines are shown in Fig. 4.

Household soap is usually sold in the form of bars, but after cutting it requires to be dried by exposure for some time in the drying room, and this has also to be done with cheap toilet soap before the bars are sufficiently hard to be cut into cakes for stamping. Fig 5 shows one of the six rooms where the stamping of toilet soap is carried out. The press used for this purpose is worked by hand, and the metal moulds by which the cakes of soap are impressed with a name or description can be changed as occasion requires.

Fig 5.—Stamping Room.

Within the last few years the better kinds of toilet soap have been submitted to a further treatment by which the amount of water in the soap is considerably reduced, a much more neutral product can be obtained, and the incorporation of perfumes is effected with less risk of loss by evaporation. The partially dried bars of soap are passed through a machine by which the soap is reduced to thin shavings which are then dried in a hot chamber, or the soap, while liquid, is run between rollers. This dry soap is passed through a powerful mill, where it is ground, compressed, and forced

through an aperture so as to be delivered in the form of a solid continuous bar which is cut off in pieces and carried to the stamping room. Soap so treated is termed "milled" soap, and Messrs. D. and W. Gibbs have given particular attention to the erection of improved machinery for carrying out this operation in the most effectual manner, and to the production of a soap basis specially suited for the purpose. Fig. 6 represents the room where two milling machines are in operation.

Messrs. Gibbs manufacture every description of hard, soft, and toilet soap as well as disinfectants and boiler fluids, and the extent of the operations carried on may be inferred from the fact that from eighty to one hundred tons of fat, oil, etc., is converted into soap and other products every week, the number of hands employed in the works being nearly two hundred.

Among the specialties manufactured by Messrs. Gibbs, mention may be made of the "composite household soap," also the "magic self-washer," and the "pure carbolic soap," which are adapted for domestic use. These are used in many Government establishments as well as hospitals, asylums, etc., throughout the country. Another specialty is soft soap for household use, which claims to be the best soap made.

In the production of toilet soaps of various kinds Messrs. Gibbs have long occupied a prominent position, and they have given much attention to satisfying all the modern demands in this respect, turning out about one hundred thousand tablets weekly. Medicated soap containing different ingredients recommended by dermatologists either for ordinary use or as suitable for the relief of affections of the skin are now made by the firm, as well as the superfatted cold-cream soap, for which there has been so large a demand within recent years.

Throughout the whole of these extensive works the arrangements are characterised by order, cleanliness, and superior equipment. As an indispensable accessory of a factory of this kind a conveniently fitted chemical laboratory is provided, where the testing of raw materials is carried out so as to maintain a thorough control of their quality and fitness for the purposes to which they are to be applied. Each of the departments is under the personal supervision of one or other of the proprietors, and every provision is made for maintaining the high reputation the firm has acquired during the past one hundred and fifty years.

FIG. 6.—MILLING ROOM.

FIG. 7.—GLYCERIN DISTILLATION.

GLYCERIN.

The quantity of glycerin produced in the saponification of fat or oil employed in soap-making amounts to about ten per cent. of the material used, but although glycerin has been known since 1779, it was not turned to any practical account until a comparatively recent period, but was run to waste. The utilisation of glycerin, which was commenced about the year 1850, chiefly for medical and pharmaceutical purposes, has received very considerable development since the practical application of nitroglycerin as an explosive agent in 1863, and in consequence of the enormous demand for glycerin as material for the production of dynamite, the working of the residual ley of soap factories has now become one of the chief sources of supply.

Messrs. Gibbs have been for many years engaged in the production of refined glycerin on a small scale, and more recently they have fitted up an elaborate and costly plant for producing distilled glycerin in large quantity. The apparatus employed for that purpose is shown in Fig. 7. The distillation is carried on under reduced atmospheric pressure, the object of which is to facilitate volatilisation of the glycerin and prevent the decomposition which would otherwise take place. Powerful exhaust pumps are used for this purpose in connection with the stills and condensers. The quantity of glycerin of different qualities produced in these works amounts to eight or ten tons weekly.

BEESWAX ANALYSIS.*

BY R. GLODE GUYER.

(*Concluded from page* 386.)

Donath's test,* which is frequently recommended, is a colour reaction. Treat 5 grammes with 20 grammes of strong nitric acid; heat for one minute. Then dilute with water, 20 C.c., and make strongly alkaline with ammonia. Pour off the liquid from the solid wax; if the colour is yellow the wax is pure, but 1 per cent. resin will produce a reddish-brown solution.

Cerasin and the Paraffins.—Paraffins can be readily detected and frequently estimated from the A.V. and E.V., etc., down to 5 per cent. The melting point and specific gravity are of little value in detecting bodies of this class, since there is so little difference between them, take the gravity, for instance:—

Beeswax	0 963	Dieterich.
Ceresin	0·920 to 923	
Beeswax, 50 per cent. ...	944	
Ceresin, 50 per cent. ...		

For general purposes the carbonisation process with strong sulphuric acid is of great utility in qualitative work, but scarcely reliable enough for quantitative analysis, though with ordinary care most useful data can be obtained. Of all the special tests for adulterants in wax, this is by far the most important, since it is the one generally in vogue for legal purposes. The *modus operandi* is simple. Digest the wax in about ten times its weight of strong acid and heat gently. Large volumes of SO_2 are evolved, and therefore this operation should be conducted either in a fume cupboard or the open air. When the action is complete remove from the source of heat, cool and wash with spirit to remove the unaltered acid, and exhaust the residue with hot ether in a Soxhlet's tube. Evaporate the ether and the residue is paraffin, provided that the wax was completely carbonised in the first instance. If care is taken in performing this test an approximate idea of the amount of paraffin present can be ascertained. It is advisable to determine the melting point of the residue.

Carnaüba Wax.—Hitherto the adulterants treated of can be either isolated or detected with a certain degree of accuracy, which is not the case with carnaüba wax.

The chief indication of its presence is the determination of the acid value, for this wax has a remarkably low one—4; while it alters the acid value it does not materially affect the saponification value, since it raises the ether value in the same ratio as it decreases the acid value, and therefore compensates the saponification value. If suspected by this process it will be as well to find an halogen absorption number; for as previously referred to, carnaüba wax will absorb a considerable amount of either iodine or bromine. Beyond these two tests there is no direct method for the determination of this somewhat important adulterant; its presence can only be inferred by deduction.

Japan Wax, like the preceding cases, is distinctly difficult of detection. It will tend to lower the melting point, while it does not materially alter the specific gravity. It is saponified by aqueous alkali, and therefore can be detected by the stearic acid process; this is perhaps the best process to detect it, providing stearic acid and resin are absent. The high ether value is a considerable help in determining the presence of this wax. It has an ether value of 200 and acid value of 20, and consequently will produce a considerable change in these figures unless compensated for by a body like stearic acid.

Water.—Water is sometimes blended in wax. This causes the wax to have a somewhat "short" fracture. It can easily be estimated by any of the usual methods.

Tallow.—Tallow finds its way into wax occasionally; can be readily detected by melting the wax, and placing in it a piece of a lamp wick and burning for a few seconds, and blow it out so as to allow it to smoulder, the odour of acrolein is at once detected if tallow is present.* This substance can be also noticed by the adulteration of the melting point, which it lowers: tallow, 50° to 41°; also by raising the ether value, and, like carnaüba wax, has a high halogen absorption value.

Tallow: Melting point, 41° to 50°; specific gravity, 925 to 940.

A.W.: Ether value, 185; specific value, 195; I.V., 40.

Tallow varies very considerably, therefore these figures must be regarded as approximate only.

Honey.—Not unfrequently traces of honey can be found. When it is present it is a proof that the sample has not been subject to much treatment, for the very fact that after wax has been melted once or twice for the addition of adulteration, the glucose would be lost. It can be detected by boiling the wax in water; when cool, filter, and treat the filtrate in the usual manner with Fehling solutions.

Judging the Results.

In wax analysis the opinion as to the quality and the amount of adulteration can only be arrived at by considering all chief tests together.

Any one who has had a general chemical training can perform any of the tests alluded to, but to be able to form an accurate opinion requires only what time can give—experience. From what has been pointed out no single test is far reaching enough to enable any one, however expert, to pronounce a sample pure. But very frequently the failure of a sample to reach a certain standard in a single test is sufficient in itself to justify condemnation. In analysing beeswax it is best to make a systematic investigation, preferable in the order in which they are alluded to in this paper. 1st. Physical. 2nd. Chemical. *a*. General. *b*. Special.

Melting Point.—This point should always be taken first. The B.P. states that it should melt at 63 3 C.; this is somewhat dictatorial. The editor, in his defence when this, the present edition, was issued, said:—

"The conditions of good average commercial samples are what must be considered rather than that of special home-gathered specimens."†

This was his defence, certainly it is an averaged figure, but I think no one is justified in condemning a sample which differs from it slightly.

The leading authorities have not observed such uniformity:—

Allen	63°
Rudorff	63° to 64°
Wright	61° to 65°
Thorpe's 'Dictionary'	62° to 64°

Therefore, it is better to have a slightly wider range, and I would suggest 62° 5 to 64° for commercial and pharmaceutical purposes. If a wax does not melt within this range, do not hesitate, but reject it, if not as worthless, at any rate as too suspicious to guarantee purity; but supposing it has a melting point within this range, then accept it as pure, as far as this one point is concerned, and proceed to determine the sp. gr.

The B.P. is inconsistent in its demands, in the first place it requires a very exact melting point, and then immediately gives a very wide range for the specific gravity, viz:—0·950 to 0·970.

* Read at a meeting of the Chemists' Assistants' Association.
† Röttger, *Journ. Soc. Chem., Ind.*, 1891, 575.

* Thorpe's 'Dictionary of Chemistry.'
† *Pharm. Journ.* [3]., xxi., 467.

This is obviously wrong, for a wax having a gravity of ·950 would certainly have a melting point under 63·3° C., unless it is adulterated. The authorities on this point—specific gravity—do not vary so much, in fact their figures are remarkably concordant, considering that beeswax is a natural product.

For Yellow Wax.

Allen	0 963
Hager	0·965
Dieterich	0 962
Wright	0·965
Thorpe's 'Dictionary'	0·960 to 0·963

From these figures it will be at once noticed that they only vary in the third degree. Though there are published figures giving wax as low as 0 918, to as high as 0 970 0·975, but as they are of somewhat doubtful origin I have preferred to ignore them, for they must have been exceptional. I would suggest that you take for the limits of this standard 0·962 to 0·966; by taking a somewhat narrow limit you are not likely to pass a sample heavily adulterated, though it is perfectly possible to add adulterants which have this gravity and also a similar melting point.

What was said with regard to the melting point holds good here, that if a wax does pass this test it is no proof of its purity, but if it fails it is a proof of its impurity. The solubility should also be considered, soluble in warm ether, insoluble in cold alcohol, and 25 per cent. soluble in chloroform, little reliance can be placed in these tests, since several adulterations from their close affinity to wax behave in a similar fashion.

The most valuable information, however, is obtained by Hubl's process, by the determination of the three great chemical constants. In dealing with these their results will be referred to by the "Permillage" method.

The numbers of milligrammes of KOH used by 1 gramme of wax. Using this system you are dealing with larger figures than by the percentage system.

Pure beeswax has on an average the following chemical constants:—Acid value, 20; ether value, 75; saponification value, 95; Ratio, 3, 80. Any great deviation from one or more of these figures indicates adulteration. From these data Hubl has produced some very valuable deductions.*

1st. If the saponification value be found below 92, the ratio being that for pure wax, paraffin wax must be present.

The reason of this is obvious. The alkali has no action on the paraffin, which, if present, will reduce these three figures in the same ratio.

Example.—A. V., 17; E. V., 63; S. V., 80; Ratio, 3, 75.

If such were found on analysis, the wax would from this deduction be classed as adulterated with paraffin, and a special search made for the same.

2nd *a*. If the ratio is greater than 3, 80 the presence of one of the other waxes would be inferred, Japan, carnaüba, or tallow. Japan wax would raise the ether value so as to greatly increase the ratio, for its own ratio is 10. Carnaüba wax has a similar ether value, 75, but a low acid value, which again will increase the ratio by the reduction of the acid value.

b. Japan wax is absent if the acid value falls below 20. This is obvious, for this wax has a minimum acid value of 30.

3rd. If the ratio is less than 3·80 stearic acid or resin must be looked for. Both of these adulterants have either no ether value or no acid value, and consequently when present would tend to bring these two figures nearer and therefore reduce the ratio.

Having made an examination of the wax by this poocess it will be an easy matter to make special examination for the substance indicated. With all its excellence this test is not sufficient to guarantee purity. The combination of adulterants can be so carefully adjusted as to make the sample appear pure, and therefore it is always advisable to make further search, as wax may be heavily adulterated so carefully that it may easily pass detection. The following is a good example of a "faked" wax containing no beeswax in its composition.

		A.C.	E V.
*Japan Wax	37·5 per cent.	7 5	75
*Stearic Acid	6·5 ,,	12·7	0
*Cerasin or Paraffin Wax	56 0 ,,	0	0
	100	20·2	75

This is only one of the many combinations that can be used. Stearic acid can be compensated by spermaceti. Resin can balance the deviations caused by the addition of tallow, not only to pass safely through the ordeal of Hubl's process, but also to defy detection in the physical examination.

It is obvious, therefore, that though this process is of great utility in analysing beeswax, its results are not altogether conclusive. Every sample should be boiled with alcohol; when cold filtered, and add an equal volume of water to one part, and an equal volume of solution of chloride of calcium to another. In both cases the solution should remain bright and clear, precipitates indicating the presence of Japan wax, resin, tallow, etc.

In addition to these two tests, the wax if of a doubtful character should be submitted to the halogen test; absorption of either iodine or bromine at once point to the presence of a foreign body, most probably carnaüba wax, tallow, or resin.

It is evident that to perform an analysis of a wax on these lines requires both time and a convenient place for work, which are not generally obtainable in business, but nevertheless a very accurate idea as to the purity of the wax can be obtained by making a qualitative systematic examination of it, somewhat on these lines.

By submitting a sample of beeswax to a systematic investigation on the lines indicated, very reliable data may be gathered as to its relative value, for I regard it as almost an impossibility to say that a sample is absolutely pure beeswax from any analytical data; but I am confident that if a wax passes through the ordeal of these tests it can safely be judged as a good sound wax for all pharmaceutical requirements. Perhaps you will say I am too exacting in my demands with regard to this well-known substance; if so, I would refer you to those chemists who have been prosecuted for selling adulterated beeswax, for they, I am sure, though unknown to me, will support me in advocating a more stringent set of tests for this wax, and, moreover, that chemists should examine more closely those drugs which they buy, and see that they do come up at any rate to the Pharmacopœia standard. For further support I would commend to your notice two leading articles which have appeared in the *Chemist and Druggist*. In one of them special reference is made to a simple method of determining the specific gravity, which is well worth your notice. In trying to elucidate the methods employed in wax analysis, I wish to say that, whilst I have not attempted to place before you any original results, I have only brought before your notice those tests with which I am familiar by frequent use, and, moreover, have preferred to give the results of the observations of well-known authorities rather than my own, and then only those which are more or less in accordance with my personal observations.

I take this opportunity of tendering my best thanks to Messrs. Hodgkinson, Treacher, and Clarke, in whose laboratories these observations were made, and who have so generously placed their books at my disposal.

* Lewkowitsch, 'Oils, Fats, and Waxes.'

* Lewkowitsch, 'Oils, Fats, and Waxes,' p. 538.

PHARMACEUTICAL JOURNAL.

A Weekly Record of Pharmacy and Allied Sciences

ESTABLISHED 1841.

Circulating in the United Kingdom, France, Germany, Austria, Italy, Russia, Switzerland, Canada, the United States, South America, India, Australasia, South Africa, etc.

Editorial Office: 17, BLOOMSBURY SQUARE, W.C.
Publishing and Advertising Office: 5, SERLE STREET, W.C.

LONDON: SATURDAY, NOVEMBER 21, 1896.

THE TRIUMPH OF ONE-MAN COMPANIES.

A QUESTION was decided by the House of Lords on Monday last, which has the effect of placing the much-abused Companies Act in a worse light than it has ever appeared before. What had come to be regarded as a crushing blow to so-called "one-man companies," has been converted into a definite reading of the law in favour of their legality, whatever motives may have influenced their promoters. As a result, the law affecting joint-stock companies becomes a practical absurdity, more anomalous than its worst critic could have formerly conceived possible. In view of the fact that fresh legislation on the subject of limited liability companies is at present under consideration by the Government, it is perhaps as well that the utterly unsatisfactory nature of the existing Statute should be manifested as clearly as possible, though for a time the way may seem open for many crying scandals and what would morally be considered offences against strict commercial integrity. Careful reading of the judgments, a very complete report of which appeared in Tuesday's *Times*, makes it very plain that, whilst the Judges felt bound to interpret the law as they did, that law as interpreted by themselves is not what they like as individuals. The daily press is also, very fortunately, unanimous as to the undesirability of retaining the law as it now stands, and it may be that the result of this decision will be to ensure a far more sweeping amendment of the Companies Act than appeared altogether probable when the Select Committee appointed to investigate the matter published its report a few months ago.

The occasion was an appeal from a decision of the Lords Justices confirming a judgment by Mr. Justice VAUGHAN WILLIAMS in the case of BRODERIP *v.* SALOMON (see *Pharm. Journ.*, June 1, 1895, p. 1110). The learned Judge had made an order directing SALOMON — who had sold his business to a company consisting of himself, his wife, his daughter, and four sons—to indemnify the limited company formed by him against the unsecured debts and liabilities incurred by and in the name of the company. But the case was of much greater importance than would appear from this brief statement, for, incidentally, the question was raised as to the legality of companies constituted as in this instance. As already mentioned, the Lords Justices upheld the decision of the Divisional Court. Lord Justice LINDLEY was of opinion that the company had been formed simply in order to enable SALOMON to carry on his business with limited liability, the object of the arrangement, as he expressed it, being "to do the very thing which the Legislature intended not to be done." He therefore regarded the company "as a corporation created for an illegitimate purpose." Lord Justice LOPES said it was never intended that a company should consist of one substantial person and six mere dummies, nominees of that person, and that "to legalise such a transaction would be a scandal." Lord Justice KAY also concurred, on the ground that it was contrary to the principle of the Act "to legalise a pretended association for the purpose of enabling an individual to carry on his own business with limited liability, in the name of a joint-stock company."

The striking unanimity manifested by the two Courts might have been regarded as rendering the decision fairly conclusive. But the further appeal to the House of Lords has resulted in a total reversal of the position, the former judgments being apparently based on a wrong conception of the issues raised. The Lord Chancellor, in moving that the judgment appealed from be reversed, said that the important question, if not the only one, to be decided was whether the company had been validly constituted or not. If once a company were legally incorporated, it must be treated like any other independent person with its rights and liabilities appropriate to itself, the motives of those who took part in the promotion of the company being absolutely irrelevant in discussing what those rights and liabilities are. He could not follow the proposition that the assumed formation of the company as a scheme to enable SALOMON to carry on business in the name of the company, was contrary to the true intent and meaning of the Companies Act. If the company were a legal entity, the business belonged to it, and not to SALOMON. If the Act gave the company a legal existence, every one of the grounds upon which it was sought to support the judgment of the Court of Appeal was disposed of. The learned Judges had never admitted the proposition that the company had a real existence, for the question of the inexpediency of permitting one man to be, in influence and authority, the whole company could not arise if the company had been duly constituted by law. Lords WATSON, HERSCHELL, MACNAGHTEN, MORRIS, and DAVEY concurred with the Lord Chancellor's opinion.

The judgment of the Court below was therefore reversed, and as the law now stands it is open to any individual to carry on his business with limited liability, so long as he has secured the passive co-operation of six "dummies," and fulfilled all the formalities essential to the legalisation of a joint-stock company under the provisions of the Companies Act. In conclusion, the following passage is quoted from Lord HERSCHELL'S judgment as fairly indicating the position of the House of Lords, and explaining this unexpected reversal of a judgment that had commended itself alike to justice and common sense:—"It may be," said his Lordship, "that a company constituted like that under consideration was not in the contemplation of the Legislature at the time when the Act authorising limited liability was passed; that if what is possible under the enactments as they stand had been foreseen, a minimum sum would have been fixed as the least denomination of share permissible, and it would have been made a condition that each of the seven persons should have a substantial interest in the company. But we have to interpret the law, not to make it." That being the case, there is clearly need for further law-making on this subject.

ANNOTATIONS.

An Evening Meeting of the Pharmaceutical Society will be held at 36, York Place, Edinburgh, on Friday next, November 27, at 8.30. This will be the opening meeting of the session, and Mr. J. Laidlaw Ewing, who will take the chair, will make an opening statement, after which Mr. Thomas Maben will discourse on "The Manufacture and Use of Compressed Gases," the lecture being illustrated by lantern slides. Recent additions to the Edinburgh Library and Museum will be exhibited and referred to subsequently if time permits.

The Pharmaceutical Cricket and Football Club will hold its annual smoking concert on Thursday next, November 26, when Professor J. Reynolds Green will occupy the chair. The place of meeting is the Crown Room, Holborn Restaurant, the time 8 p.m., and tickets (1*s.* 6*d.* each) may be procured from Mr. E. A. Umney, 17, Bloomsbury Square, W.C. An excellent programme has been arranged, we understand, at heavy cost, and those who wish to see the finances of the club in a flourishing condition are asked to express their sympathy in a practical form by taking as many tickets as possible.

The School of Pharmacy Students' Association began the work of the new session this week, with the delivery of an introductory address by Professor J. Bretland Farmer, M.A., of the Royal College of Science, South Kensington. The election of officers also took place at this meeting, Professor Green relinquishing the presidential chair in favour of the Dean of the School, Professor Greenish. In order that the Association may be successfully maintained in its present position, it is desirable that the support of past, as well as of present, students of the School of Pharmacy should be contributed, and the honorary secretaries will be glad to receive subscriptions (2*s.* 6*d.* each) from as many as possible, addressed to them at 17, Bloomsbury Square, W.C.

The Danger of Secret Medicines has been once again exemplified by the death of a promising young Dublin clergyman from inadvertently drinking a preparation of aconite, contained in a medicine for neuralgia, which had been obtained from a "professor" in London. The bottle was not labelled "poison," and the deceased mistook the contents for rum, which he had been recommended to take for a cold. At the inquest the jury expressed the hope that the vendor—the "professor" referred to—would be prosecuted.

The Royal Society's Medals have this year been awarded for what may be regarded as, for the most part, comparatively second-rate researches and discoveries, presumably because nothing much in the absolutely front rank has been recorded. Professor Carl Gegenbaur receives the Copley Medal for his researches in comparative anatomy, whilst Professors Philipp Lenard and Wilhelm Conrad Röntgen are jointly granted the Rumford Medal for their investigation of the phenomena produced outside a highly exhausted vacuum tube through which electrical discharge is taking place. A Royal medal goes to Professor Charles Vernon Boys for his invention of quartz fibres and investigation of their properties, improvement of the radiometer, etc. The Davy Medal is with good reason awarded to Professor Henri Moissan for the isolation of fluorine and the use of the electric furnace in the preparation of refractory metals; and the Darwin medal to Professor Giovanbattista Grassi for discoveries bearing more especially on matters directly related to Darwin's speculations.

The Chemists of Plymouth and Neighbourhood set an example as regards unanimity on trade topics, which might advantageously be copied in other districts. For, whether the members of any class hit upon an absolute remedy for a given grievance or not, they are more likely to attain definite and satisfactory results by acting together than independently. At the same time it is an open question whether the "conscience" of a majority is always so healthy and sensitive as might be, or whether it fairly represents the average conscience of the individuals constituting that majority. Accordingly, much more careful deliberation is requisite before important steps are taken by a body of men than would be necessary in the case of any one of them deciding the same matter for himself alone. Much greater care must also be taken to prevent any subversive influence on the public interest, else legal difficulties may arise.

A Letter Drawn Up and Signed by thirty-nine chemists carrying on business in and around Plymouth has elicited these remarks. This letter has been drafted in reply to a communication from the proprietors of a preparation about to be introduced into the West of England, asking local chemists to stock the same. In the reply the position is taken up that, as the retail price of the preparation is not protected and the article is advertised at unremunerative prices, the signatories must decline to take any interest in its sale. More than this, they refer to the possibility that they may find it necessary to use their influence with the medical profession and with customers to use other preparations of a similar kind in preference, unless and until the proprietors of the new preparation choose to co-operate with them. The reply concludes with the words "if this protection be withheld we must seriously consider the advisability of continuing to stock your preparations at all."

The Ethical and Legal Aspects of this document need not be considered here, though it may be well to point out that the American decision recently referred to in our pages (*ante*, p. 409) seems to have some bearing on the question. It does appear somewhat impolitic, however, to place such a powerful weapon as the letter undoubtedly constitutes in the hands of those who by its publication are made opponents. The copy of the letter received is not dated, and we do not gather that the original has yet been despatched. If not, it may be that a little serious consideration on the part of the signatories may induce some of them, at least, to withdraw their assent to what may only too easily become a source of unexpected difficulty and inconvenience to every one concerned.

Co-operation in Aerated Water Manufacture, as exemplified by Camwal, continues to prove successful, judging from the eighteenth annual balance sheet. The list of members of the Association now numbers nearly four thousand. The factories at Gifford Street and Mitcham have been considerably enlarged during the year to meet the increase of business, and new factories are being built at Manchester and Birmingham. Out of the profits on the year's trading it is proposed to give the employés a liberal bonus, as hitherto, and to pay a dividend of 10 per cent., with a bonus of 2½ per cent., free of Income Tax. Mr. H. Kemp, of Manchester, has consented to join the Board of Directors, and the annual meeting of the Association will be held at Anderton's Hotel, Fleet Street, E.C., on Tuesday next, November 24, at 3 p.m. The continued success of this venture suggests that it ought to be possible for chemists to reap equal benefit from other undertakings run on similar lines. Why, indeed, should they not co-operate to provide the major portion of the goods they sell?

Pharmacies in Scottish Towns.—A correspondent, referring to a paragraph in last week's Journal, remarks that Perth with twelve pharmacies to a population of thirty thousand is not such a bad example of overcrowding after all, as the small town of Elgin, with a population of little over eight thousand, has seven pharmacies within its bounds. Nor is it much better from a medical point of view, there being no fewer than eight fully qualified practitioners and one assistant in the town. If, therefore, Perth is a place for aspiring pharmacists to avoid, much more so must Elgin be.

"Poisoning by Medical Prescription" is the startling title of an article in last week's *Law Times*, the writer of which sets himself the task of proving that there is danger in the fact "that medical practitioners should be able to distribute broadcast the means by which poison may be obtained, in such a way as to frustrate the very ends which the Pharmacy Acts were specially intended to secure." But the danger is even greater than this briefless barrister, filling up his time by discovering mare's-nests, seems to imagine, at least it would be were it not for the ever-watchful chemist and druggist. For everyone is not so sure as he appears to be that "medicine dispensed" means medicine "dispensed from the prescription of a qualified medical practitioner," in spite of the decision in the case of Berry *v.* Henderson. Indeed, the probabilities are entirely in favour of the view that any recipe for medicine becomes a prescription in accordance with Section XVI. of the Pharmacy Act, so long as the formalities there specified are properly carried out.

The Danger of Repeating Prescriptions is, nevertheless, one to be considered, but the remedy is entirely in the hands of medical men, who can as easily as not mark every prescription "Not to be Repeated." Otherwise, it is unfair to throw the onus upon the dispenser. With regard to the suggestion of the *Law Times*, that the dispenser should "satisfy himself that a prescription is genuine," this is somewhat of an absurdity if, as we contend, anyone may write a prescription. Nor is there any added risk to the public in this, for a properly qualified dispenser is always capable of determining when a prescription may not safely be dispensed. As showing the style of argument employed by the legal writer, his concluding sentences may be quoted: "Under the law as it stands the doctor virtually helps (*sic*) the chemist to do indirectly what the latter is prohibited from doing directly. If there is any merit at all in our poison laws, a medical prescription should be clearly defined for the purposes of those laws, and its operation strictly limited. It should not be made a cloak for the commission of those very evils which the Legislature has endeavoured to prevent." How the legal mind, in its struggle after assumed impartiality, entangles itself in verbiage and becomes powerfully partisan!

The Midland Pharmaceutical Association has decided to call a meeting of the trade at the Grand Hotel, Birmingham, on Tuesday, the 24th inst., at 8.30 p.m., to consider the position of the trade in Birmingham and district and to discuss trade topics, the meeting to be of a private and social character. At a meeting of the Trade Committee of the Association, held on Tuesday last, Mr. Wm. Jones was re-elected Chairman, and Mr. F. H. Prosser Hon. Secretary.

Mr. Bell, whose report on the Island of Madeira is referred to in the next column, appears to have carefully noted the temperature during 1895, and publishes a table giving the maxima and minima for each month. Calculations based on this table give the mean annual temperature as 67·25° F. He also gives an interesting list of plants growing in Madeira gardens.

PARLIAMENTARY RETURNS AND REPORTS.

Weights and Measures.—The Board of Trade report on its proceedings under the Weights and Measures Acts during the year ending August, 1896, has just been circulated. In addition to the verification of standards, measuring instruments, and gas-testing models for official use by Government departments, as well as by local and colonial authorities, the Standards Department has been engaged during the year in an exceedingly elaborate and delicate comparison of the primary standards of Russian weight and measure with the imperial standards in London. An appendix to the report gives a detailed account of this investigation, which was conducted by Mr. H. J. Chaney, representing the Board of Trade, in association with Professor Mendeleeff and Dr. Blumbach, who were officially charged by the Russian Government with the care of the standards. The measure tested was the half-sachen of 42 inches, and the comparison of the space between the third and the thirty-ninth inch on that measure with the imperial yard resulted, after an interminable number of check observations, in the establishment of practical identity between the English inch and the forty-second part of a half sachen. To be accurate, the 42 inches of the Russian measure is equivalent to 41·999582 imperial inches. But even this formidable decimal does not represent finality, for its veracity depends upon the temperature, 62° F. (the standard temperature) being identical with 16·667° on the Centigrade hydrogen thermometer scale. The authorities are evidently far too scientific to dogmatise. The comparison of the Russian lb. resulted in the determination of the weight as being ·0153 grains heavier than the Parliamentary standard lb. avoirdupois (7000 gr.).

Another Appendix of some interest is that referring to the second sexennial meeting of the International Conference on Weights and Measures, held in Paris in 1895, under the Metric Convention of 1875. Most Britons are ignorant of the existence of such a body, and this is not surprising, seeing that Great Britain is a very late adherent to the Convention, not having joined until 1887. We are now however, associated with seventeen other nations in the "propagation and perfecting" of the metric system. The various States maintain at their common expense an International Bureau of Weights and Measures at Paris, which is governed by a permanent International Committee, appointed by the Conference. Mr. H. J. Chaney, of the Standards Department of the Board of Trade, is the British representative on this Committee, and it was doubtless due to his efforts that the Bill to legalise the use of metric weights and measures in this country was introduced into Parliament last session by the President of the Board of Trade.

Consular Reports are oft-times of more than official or political interest, and the intelligent report on the Island of Madeira, which Consul Henry Mercer Bell has contributed to the Foreign Office archives, may well be ranked among the non-political or instructive class. Mr. Bell reports on the soil, the temperature, the rainfall, and flora of the island, with more especial reference to its fruit-producing capabilities. Bearing in mind the obviously volcanic origin of the island, it is not surprising that the soil is purely volcanic and of no considerable depth. The fertility of this volcanic dust is due to the deposit thereon of the rich loamy result of centuries of denudation. The annual rainfall is 57·28 c. inches, and the bulk of it falls in one month, so that a very unimaginative person might readily form some idea of the quantity of alluvial matter brought to the lower levels in course of time. Mr. Bell calls attention to the absence of lime in either soil or water, and traces to that cause the inferiority of all stone fruits grown in Madeira. Experiments with lime fertilisers confirm his conjectures. However bad it may be for stone fruits, the soil and temperature seem to suit the citron family admirably, no less than four species flourishing practically all the year round:—Citrons (*C. medicus*), lemons (*C. limonus*), limes (*C. acida*), and oranges (*C. aurantium*). Sufficient energy exists amongst the dwellers in this "terrestrial paradise," as it has been called, to carry on a feeble remnant of a once considerable export trade in citrons. They are packed in "pipes" containing from 350 to 500 fruit, and used to fetch £20 to £30 per pipe, but competition has brought the amount down to between £2 and £3, consequently the native prefers to go along the "line of least resistance" by letting exports slide, and taking his chance of selling his fruits to passing African liners.

BRITISH PHARMACEUTICAL CONFERENCE.

MEETING OF EXECUTIVE COMMITTEE.

A meeting of the Executive Committee was held at 16, Bloomsbury Square on Wednesday, November 11. Present:—Mr. W. Martindale (Vice-President) in the chair, Messrs. Atkins and Hills (Vice-Presidents), Mr. Moss (Treasurer), Messrs. Bird, White, and J. C. Umney, Messrs. Naylor and Ransom (Hon. Gen. Secretaries), and Mr. Nightingale (Assistant Secretary).

Letters regretting inability to attend were read from the President and Messrs. Ewing, Wells, Farr, Foster, Wardleworth, Wright, and Coull.

A communication had been received from Mr. Russell (Hon. Local Secretary) suggesting August 2 or August 9 as suitable date for commencing the meeting of the Conference at Glasgow in 1897. It was decided to meet upon the latter date, viz., Monday, August 9. Some correspondence was read between Mr. A. C. Abraham, of Liverpool, and the Senior Hon. Gen. Secretary, on the question as to whether members are entitled to send copies of papers read at the Conference to the editors of journals for publication *in extenso*. A resolution was unanimously passed affirming that all such papers are the exclusive property of the Conference, and should only be available for publication in full in the official report of the Proceedings in the 'Year-Book.'

Resolutions were passed expressing the deep regret with which members of the Executive learnt of the deaths of Professor Markoe, of Boston, U.S.A., an honorary member of the Conference, and of Mr. A. H. Mason, of New York, a former Hon. Colonial Secretary. The Secretary was instructed to send letters of condolence to the relatives.

It was moved by Mr. Moss, seconded by Mr. Hills, and unanimously resolved that a very cordial vote of thanks be passed to the Local Committee at Liverpool for their generous donation of £20 to the funds of the Conference. Twenty-one gentlemen, having been duly nominated, were elected to membership.

CHEMISTS' ASSISTANTS' ASSOCIATION.

ANNUAL CONVERSAZIONE.

On Thursday evening, November 12, the members of this Association held their annual conversazione in the Portman Rooms, Baker Street, W. The proceedings started at 8.30 p.m. with a reception by the President (Mr. Morley) and a concert given by the "Grosvenor Ladies' Concert Party." Dancing commenced at 9.45 p.m. to the music of "Hall Woolnoth's Band," and was kept up with considerable energy until 5 a.m.

Mr. C. Morley, President of the Chemists' Assistants' Association, took the chair at supper, and in a short speech referred to the success of the conversazione, and proposed the toast of "The Ladies," which was responded to by Mr. T. H. W. Idris, L.C.C., J.P.

Amongst the company present (about 250 in all) were Mr. Walter Hills (President of the Pharmaceutical Society), Mr. R. Bremridge, Mr. T. H. W. Idris, and several other well-known pharmacists. The recent death of Mr. Harry A. Thomas, a late Hon. Secretary of the Chemists' Ball Committee, prevented the attendance of several. The duties of M.C. were efficiently performed by Mr. T. C. W. Martin and Mr. C. W. Martin, whilst the arrangements for the evening were in the hands of Messrs. F. Cooper, E. W. Hill, A. R. Melhuish, C. Morley, H. H. Robins, C. E. Robinson, G. Roe, C. J. Strother, E. A. Umney, and Geo. E. Pearson (Hon. Secretary). The excellent manner in which the arrangements were carried out was in no small degree due to the indefatigable efforts of the last-named gentlemen, under whose good management everything passed off without a hitch.

MANCHESTER PHARMACEUTICAL ASSOCIATION.

LEGAL STANDARDS FOR DRUGS, ETC.

The second meeting of the above Association for the present Session was held at the Victoria Hotel, on Wednesday, November 11, when a very practical paper on "The Necessity of Legal Standards for Drugs, and a Criticism of the Standards of the Pharmacopœia," was read by Mr. Duncan, and Mr. W. Kirkby, in the absence of Mr. G. S. Woolley, the President, occupied the chair.

Mr. Duncan said: There is no Statute constituting the Pharmacopœia a legal authority, and it is not mentioned in the Sale of Food and Drugs Act. Prosecutions because of a drug bearing the name of a preparation of the Pharmacopœia, but not complying with the characters and tests, have been, as a rule, under Section Six of the Sale of Food and Drugs Act. This Section states that "no person shall sell to the prejudice of the purchaser any article of food or any drug which is not of the nature, substance and quality of the article demanded. The Food and Drugs Act requires amending, so that such things as beeswax and baking powder, which have been decided to be neither food nor drugs, shall be brought within its jurisdiction. There is often very great difficulty in fixing a standard, of determining what purity is, what is a reasonable amount of inert or extraneous matter due to imperfection of manufacture or collection, or the limits within which certain constituents should exist. The want of authoritative standards frequently leads to lengthy legal argument and to vexatious litigation. It has been felt more in regard to foods than drugs. It is the chief obstacle to the efficient working of the Food and Drugs Act. In the preface to the Pharmacopœia is the statement that it is intended to afford one uniform standard and guide, whereby the nature and composition of substances to be used in medicine may be ascertained and determined. I wish to direct attention to the fact that it makes no claim to be a guide in anything else than medicines. A large number of the things in the Pharmacopœia can only be used as medicines, but there are many which are frequently used for other purposes. For example, cloves, caraways, camphor, mustard, pepper, olive and other oils, and very many inorganic substances. If a chemist is assured that any of these are required for other than medicinal purposes, he is not bound by the Pharmacopœia in any way. Opium is occasionally used for smoking, and a chemist would be justified in selling it for this purpose, of a lower quality than that of the Pharmacopœia, providing that it was not adulterated, as it would then be no more of a drug than is tobacco or tea. The appropriation by the Pharmacopœia of the common and universal names of chemicals is sometimes an inconvenience, especially when the strength and quality is an unusual one. Mr. Duncan illustrated this by two examples, chloride of calcium and cyanide of potassium. He added, the most extraordinary misapplication of a name is that of white wax and yellow wax for beeswax. White wax of commerce may be paraffin or any other wax that is of a white colour, and yellow wax may be the same coloured. If the Latin names "Cera alba" and "Cera flava" are liked, there cannot be any great objection to their retention, confusion would not be caused, as it is only medical men and pharmacists who use latinised names. The overlapping of drugs with foods and domestic substances is at times troublesome. The vinegar of the Pharmacopœia is malt vinegar, and contains 5·41 per cent. of real acetic acid, but vinegar for any other purpose than that of medicine need neither be made from malt nor contain as much acid. By a decision in the High Court of Justice this month (November 2), it was ruled that a sale of beeswax by a grocer, containing 50 per cent. of paraffin, did not come under the Food and Drugs Act, as it was not a drug. The Parliamentary "Select Committee on Food Products Adulteration" had, Mr. Duncan said, just made its report, and it would be profitable to look at some of the evidence and recommendations. He quoted the evidence of Mr. Charles Umney, who recommended that a revised Act should state definitely that the standard of strength adopted by the British Pharmacopœia for the time being would be the legal standard for all purposes of the Act, and the speaker thought no one would deny that the Pharmacopœia should be the sole authority in this direction. Beyond this there would be a considerable difference of opinion as to the extent to which it is advisable that it should be a legal standard. The present Pharmacopœia was too defective to serve as a standard. Sometimes it was true the character and tests there given were sufficient to lead to the rejection of substances containing any of the ordinary impurities or of defective quality, but in many other cases the character and tests were so incomplete and ambiguous as to be practically useless. Some might consider that anything bearing a pharmacopœial name should at least comply with the characters and tests, although such compliance did not necessarily prove freedom from all impurities. Mr. Duncan did not think it was a reasonable requirement, under present conditions imperfect tests might be worse than none at all, as giving a feeling of security where there was no security. He added, we shall soon have a new Pharmacopœia, and it will be an extraordinary thing if it is not considerably in advance of the present one, but does anyone expect that it will be approximately perfect in its analytical details? On the Pharmacopœia Committee the medical profession are fully represented, but not the analysts, and if the Pharmacopœia was to be reliable in its tests there should be on the Committee at least three analysts who had made a special study of drugs. It is highly

desirable that there should be a standard for the purity and quality of drugs, either in the Pharmacopœia or elsewhere. At present the public analyst performs a difficult task with ability and fairness, but he is handicapped by conflicting standards and defective laws. It is not surprising, therefore, injustice should sometimes be done to the chemist. The point I wish to emphasise is that there is no person, or body of persons, authorised to fix legal standards. It is true that certain data is accepted, or at least not disputed, in successive legal decisions, but such may be at any time overthrown by preponderating opposing evidence. Mr. Duncan eulogised the work of the Society of Public Analysts in fixing standards, and added that if the Pharmacopœia was made a standard it would require frequent revision, say annually, as it was impossible to fix all the adulterations which might arise from time to time, or other changes which it might be necessary to make. Mr. Duncan quoted from the draft of the new Sale of Food and Drugs Act, prepared by the Council of the Society, in support of his contention. The view being that an authority constituted under the Act should consist of nominees of the General Medical Council, the Inland Revenue Authorities, Somerset House, the Institute of Chemistry, the Pharmaceutical Society of Great Britain, and the London Chamber of Commerce, but omitted a nominee of the Society of Public Analysts, which, next to the Pharmaceutical Society, was probably best fitted to grapple with the subject.

Mr. Duncan criticised the Pharmacopœia for its want of scientific precision and its vagueness of statement. Sometimes it would state, *e.g.*, that no precipitate should be produced by chloride of barium without an intimation of the significance. It would be much simpler, and occupy less space, to state that the particular drug was to be free from sulphuric acid or from sulphate. The Pharmacopœia is an unequally written book; sometimes simple tests are given with unnecessary detail, whilst at other times a considerable amount of knowledge and skill is assumed. The analyses of a large number of the drugs of the Pharmacopœia are too difficult for any except those who make a specialty of analytical chemistry, and few pharmacists can spare the time from their other duties.

The pharmacists are very few who have spent the years necessary to become efficient in analytical procedure. The assaying of drugs is only worth the while of the manufacturer or wholesale dealer. If the Pharmacopœia is to be a reliable analytical text-book it must be increased to several times its present size, and be frequently revised. Percentage of active constituents, degree of purity, and other data should be given, but with a few exceptions, such as with pepsin, ferrum redactum, and extract of malt, analytical tests are better omitted, and the analyst should be left free to employ the best and latest analytical processes.

An interesting discussion followed, in which Messrs. Kidd, H. Kemp, Schollar, W. Lane, etc., took part. Mr. J. Rymer Young dwelt on the necessity of leaving the strictly scientific tests to scientists so long as the ordinary chemist was able to carry out ordinary tests. They had to educate the legal profession. The law at present was extremely anomalous, and a more definite standard to go upon. The Chairman continued the discussion, and pointed out that in regard to analysts Mr. Duncan was quite right, but the medical men had appointed referees to whom they might submit questions which they might consider beyond their purview.

Mr. Duncan replied, and agreed that a pure and unadulterated article should be sold by chemists and everyone else.

Mr. A. Blackburn, the local honorary secretary, read the minutes of last meeting, which were approved.

The best thanks of the meeting were accorded to Mr. Duncan for his able paper, and also to the Chairman for presiding.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION.

A meeting was held on November 4, at which Mr. Frank Casson presided, to hear a paper by Mr. F. Foster on "Photography in Relation to the Chemist."

He explained that the word photography meant writing by means of light, and therefore should not be confined to processes in which silver was used, but for any change in appearance and colour produced by light.

A knowledge of photography would, he said, be advantageous to chemists, as they were familiar with, and knew the properties of the chemicals employed.

He said that although the different processes of developing, fixing, toning, etc., had been reduced to "rule of thumb" there was still a scientific side to the question which had seemingly been overlooked.

Chemists, he stated, had taken a great part in the discovery of and subsequent improvements in photography.

Scheele, when experimenting with chloride of silver, found that when exposed to light chlorine was liberated and hydrochloric acid formed, also that the colours of the col-spectrum did not affect chloride of silver in the same degree, the violet end being more active or actinic than the red.

He stated that Wedgewood and Davy were the first to make use of this property of chloride of silver. Paper spread with the silver was used to take outlines of objects placed over it when exposed to light. These impressions were not permanent on account of their (the manipulators') inability to remove the unaltered silver chloride, the picture in time becoming blackened all over on exposure to light. This paper, he stated, was not sensitive enough to be used in the camera.

He then proceeded to describe the bitumen, the Daguerreotype, calotype, collodion, and gelatin processes, and then turned to the subject of development, which he divided into two classes, physical and chemical, physical in the case of the Daguerreotype and bitumen processes, chemical in the others.

In the case of the iodide and bromide of silver on the plate, the formula of a molecule was not AgI and AgBr., but Ag_nI_n and Ag_nBr_nN, representing any number, and that in the case of the latent image which was formed, in all the processes except the bitumen, was probably modified. The silver would perhaps be a sub-iodide or sub-bromide. This would explain the reason that iodine or bromine were given off although metallic silver was not deposited.

He then spoke of the theory of development, and stated that in the case of the wet collodion process the silver forming the image was not obtained from the film but from the developer, which could be proved by substituting nitrate of mercury for nitrate of silver in the developer. The result was that the image was one of mercury.

He strongly advised chemists to take up photography as an instructive and interesting practice. Several new members were proposed.

BRIGHTON JUNIOR ASSOCIATION OF PHARMACY.

The seventh Annual Dinner of this Association was held at Booth's Restaurant, East Street, the President, Mr. A. T. Jeeves, in the chair, supported by about thirty members and friends.

After the usual loyal toasts, Mr. W. Howes proposed "The Medical Profession," which he did in a very eloquent speech. He said they felt highly honoured by the presence of such esteemed members of the profession as graced their table that evening, and trusted that the mutual good-fellowship would long exist. He coupled with the toast the name of Dr. F. J. Paley. Dr. Paley, in responding, said that he was glad to see that pharmacy and medicine were gradually getting to work more hand in hand. The old-time medical man was also a man of drugs, and dispensed all his own medicines. Now the medicines were far better made up than they used to be, and doctors knew that they could depend upon the pharmacist to carry out their wishes. He considered the great advance which pharmacy had made was due to such men as Squire and Martindale, who had done so much to bring medicinal preparations to a high standard of excellence.

Dr. A. J. Richardson next proposed "The Pharmaceutical Society of Great Britain," and in so doing said that he was a firm believer in division of labour. He did not know much about the Pharmaceutical Society, except that it was founded in 1841, and by its charter promised not to encroach upon the provinces of medical men. He coupled with the toast the name of Mr. W. W. Savage.

Mr. W. W. Savage, in responding, said that it had been his privilege for some years to respond to this toast. They all knew what the Society has done for the pharmacist. It had raised them from herbalists, blood-letters, and barbers to be the right hands of doctors, who know that they can depend upon them now. They had perfected a grand Benevolent Fund, out of which assistance is rendered to any poor friend, who has only to show that he is a chemist and really in want. But the bye-laws of the Society require alteration, so as to make a representation of something like 16,000 instead of 1400 as now. Applications made to the Privy Council for legislation (on carbolic acid to wit) would carry a weight of power that must command attention.

The next toast was "The Brighton Association of Pharmacy,' which was proposed by Mr. Geo. Long, who said that he was of opinion that associations such as those were grand institutions. On all sides and in every trade, men associate and form societies, by means of which they attain great power, and not only that, by reason of these associations the members create social and friendly intercourse which tends in a very high degree to counteract trade jealousies. He thought that the senior association in Brighton had taken a great interest in the juniors in every way.

Mr. J. Williamson responded for the senior association, and Mr. A T. Jeeves for the junior association.

Mr. C. G. Yates proposed the last toast "The Guests and Visitors," and after a vote of thanks to Mr. C. A. Blamey (Hon. Sec) for the very excellent manner in which the arrangements had been made and carried out, the singing of the National Anthem brought the evening to a close.

Amongst those present were Dr. A. J. Richardson, Dr. F. J. Paley, Dr. E. G. Whittle, Messrs. W. W. Savage, H. A. Costerton, J. Williamson, E Histed, H. C. Lorne, G. B. Savage, junior, C. G. Yates, Wallis, P. M. Short, Manners, Hebb, Crocker, A. T. Jeeves, President, C. A. Blamey, Hon. Sec., A. H. Cupit, Hon. Treasurer, etc., etc. Mr. E. A. Hedgcock proved a most efficient accompanist.

At a meeting on November 11, Mr. J. Williamson gave a lecture on "The Röntgen *X*-Rays." The meeting was well attended, and a particularly interesting and instructive evening was experienced. The lecturer, in dealing with the subject, gave details of the necessary apparatus for producing these famous rays, and some interesting experiments were made, amongst which was photographing a hand by means of the rays. Shapes of coins placed in the middle of a book two inches or more thick could be distinctly seen, to say nothing of coins, etc., in cigarette cases and purses, also needles and syringe inside a hypodermic syringe case, whilst through a stout wooden box could be plainly seen the shape of a glass tube, which was therein contained. The results obtained in using the rays were wanting in definition until the introduction of the "Focus" tube invented by Mr. Sydney Rowland, and this was the kind used by the lecturer. In the earlier days of his experimenting he had spent many fruitless hours trying to obtain satisfactory results with imperfect apparatus, and it was not until he had obtained a 4-inch spark coil that he succeeded. He approached the subject from a purely photographic point of view in the first place, reading up Ganot's 'Physics' (electricity), and Crookes' 'Experiments on High Vacua,' etc. A form of radiometer was shown by the lecturer, and he had also had prepared four tubes which illustrated the different effects produced by a high tension current in tubes of different exhaustion. Many other curious experiments were shown, and at the conclusion of the lecture a great number of questions were asked, which showed that the lecture had been followed with keen interest. A vote of thanks proposed by Mr. Savage, and seconded by Mr. A. T. Jeeves (the President) was vociferously accorded.

LIVERPOOL PHARMACEUTICAL STUDENTS' SOCIETY.

This Society held its first business meeting for the winter session at University College on Thursday evening, the 12th inst., the President, Mr. John Jones, in the chair.

The attention of members was called to the coming election of annuitants on the Benevolent Fund, and the cases of Eliza Sarah Linford, the widow of the late and highly-esteemed examiner of the Pharmaceutical Society, and of Tonkin Young were commended as very deserving of the consideration of possible voters. It was also stated that the Secretary had drawn up and posted to some 200 chemists a circular calling attention to the Students' Society, its object, constitution, and history, and giving such particulars of its working as would be calculated to awaken interest in its efforts to further extend its operations and enlarge its roll of members. The result up to that time was that eleven new members had offered themselves for election, viz., Messrs. W. H. Griffiths, J. A. Thomas, John Hawley, F. Burgess, H. O. Dutton, Granby, Rushton, Ludlow-Taylor, Thorpe, J. P. Williamson, and F. S. Williamson, who were then duly elected.

In a miscellaneous communication Mr. Harold Wyatt, junr., said that those members who faithfully read their *Pharmaceutical Journal* must have noticed in the issue for November 7 the report of the London Chemists' Assistants' meeting, at which a number of very practical papers were read, amongst them two notes, or rather dispensing queries, which had not received satisfactory replies. One was to what could one attribute the production of a blue colour in an ointment containing resorcin, ammoniated mercury, and white vaseline, in which rectified spirit had been used to dissolve the resorcin? The answer appeared to him to be this: the reducing action of the three closely allied bodies pyrocatechin, resorcin, and hydroquinone on the haloid salts of the heavy metals, at least of silver and mercury, is well known, and this reducing action of the resorcin would in the case in point be further increased by the presence of the alcohol, causing the mercuric salt to gradually liberate metallic mercury. If the ammoniated mercury or the vaseline contained traces of iron, the resorcin would also give the usual phenol reaction, and a still further increase of the blue colour would be the result. The other query related to the liberation of iodine from lin. pot. iod. *c.* sapone when mixed with ol. pini sylvestris. There was no difficulty about the cause of that; it was simply due to the oil having absorbed oxygen from the air under the influence of light, giving it up as ozone or peroxide of hydrogen, either of which would liberate iodine from an iodide. This had been pointed out by Kingzett and others, and had been the cause of another dispensing query some years since in the *Chemist and Druggist*, where a mixture containing terebene, iodide of potassium, and compound powder of tragacanth had developed a deep blue colour. The terebene had liberated iodine from the iodide, and this had formed iodide of starch with the starch in the compound powder of tragacanth. The addition of small amounts of alkaline carbonate or hydrates makes no difference to the reaction which may be caused by any body of a terpene nature, from oil of lemon downwards. The lard sometimes used to make ammoniated mercury ointment had been noticed by Mr. Mitchell to cause a reddish colour after a lapse of time, and Mr. Marsden corroborated this.

A prescription showing great carelessness on the part of the writer, who had put for directions "℥ss. ex-aquâ tds," so that the "tds" seemed to be a signature, was then passed round by Mr. Mitchell, who caused some amusement by asking if any member could tell him the limit of the long-suffering pharmacist's forbearance. He thought he had reached it lately when requested by a lady customer of uncertain age to step round to her house and poison eleven cats. A humanitarian with a "lethal chamber" on the motor car principle was badly wanted in some districts of Liverpool.

Mr. Mitchell was then called on for his paper.

Lantern Slide Making.

BY R. H. MITCHELL.

After impressing upon his audience the advantage to the pharmacist from the adoption of the photographic trade as a profitable and suitable adjunct to his regular business, the lecturer remarked that it stood to sense that anyone embarking upon such a venture would be but very imperfectly equipped if he had no practical knowledge of the art of photography. He would not go into the details of photographic manipulation generally, that part of the subject having already been treated by a member of the Society in a former paper, but would confine the attention of his audience to that portion of practical photography which formed the chief work of the amateur during the winter months—he alluded to the preparation of slides for the optic lantern.

The value of good lantern slides as a means to the proper illustration of a lecture on any subject could scarcely be overrated. A lecturer who attempted to keep the attention of his hearers fixed on some scientific subject treated in a popular manner without lantern illustrations, be he ever so good was just tolerated, whilst if only a moderate lecturer and unassisted by lantern slides he was looked upon with contempt.

Lantern plates from which the slides are prepared may be divided into three classes, special, warm, and printing-out, each of which has its special advantages over the others. Some Imperial "special" plates were then shown, and it was explained that these could be used for contact printing from a negative in the ordinary printing frame, or for a reduction from a large negative in the reducing camera giving cold tones principally. Ilford "Alpha" plates, yielding warm tones, and Paget printing-out plates, for printing in sunlight, which gave a variety of tones, were also shown and remarked upon. A slide was then printed from a ¼-plate negative by gaslight, the exposure being judged by the density of the negative, and the result aimed at—a short exposure and quick developer giving black, cold tones, and a longer exposure and slow development warm, brown tones. Black tones averaged

an exposure of 16 to 20 seconds, at a foot and a half from an ordinary No. 3 fish-tail burner. The developers employed are numerous, amidol, metol, eikonogen, pyrogallol, ferrous oxalate, and hydroquinone being the favourites. Pyrogallol is scarcely suitable for lantern slides, as it stains the film. Amidol and metol are excellent, especially for slides from other photographs or engravings, though metol is somewhat rapid and requires watching. The best all-round developer, and the one most generally used, is hydroquinone, and the formula recommended was that given to the lecturer by a member of the Liverpool Amateur Photographic Association, which is as follows:—

Solution A.

Hydroquinone	½ ounce.
Sodium Sulphite	1 ounce.
Citric Acid	30 grains.
Potassium Bromide	40 grains.
Water	10 ounces.

Solution B.

Caustic Soda	80 grains.
Water	10 ounces.

Use one part of A, one of B, and two of water. A negative of a marine subject was then developed, and as plenty of detail had to be shown in the rigging of the ship, etc., an extra amount of solution A was used.

Reduction by the camera was then treated, and an easy way of getting the same results without the use of a special camera was explained. A large piece of cardboard with a square piece cut out of the centre, and this hole covered with tissue paper, is hung against the window, the printing frame with the negative wedged in it is hung over this tissue paper covered hole, so that the light passes through the negative. The camera is now set up and the negative focussed on the screen in the space marked out for the lantern plate. The plate is then introduced, and exposed for at least six to ten minutes to ordinary daylight, not direct sunlight, this length of time being required owing to the quantity of light passing through the negative being lost by diffusion about the room.

Plates giving warm tones, such as Ilford "Alpha" plates, are used for contact printing, as they require so much time if used for reduction, and after development are either fixed straight away, when they give a sepia tone, or may be treated to one of the combination fixing and toning baths, a great variety of tints resulting. The latitude allowed by these plates makes them very useful where any "dodging" of the printing process is required, such as blocking out the sky or emphasising some particular part of the picture. The printing-out plate is used for contact sunlight printing, just as ordinary P.O. paper, but it is as well to expose the negative to diffused daylight, and to be careful, when removing the frame for the purpose of watching the printing, to return it to the same spot in the window as before, or a blurred slide will be the consequence. On removal from the frame the plate is washed, toned with the usual gold bath used for paper, fixed with sodium hyposulphite, and finally well washed. The toning can, with these plates, be managed so as to arrive at splendid results. If a variety of colour be wished for, a fine sepia to russet brown tint can be given to the slides by placing them, after fixing and well washing, in a solution of uranium ferridcyanide—

Uranium Nitrate	15 grains,
Potassium Ferridcyanide	15 grains,
Water	4 ounces,

carefully noting the following points:—do not try this on an imperfectly washed plate, do not overdo the tint, and lastly, carefully choose your subject, as it does not suit all alike.

Clouds can be put into lantern slides by printing them separately on another plate and using this as a cover glass. The lecturer, in conclusion, said he would not go into the finishing off of the slides such as marking and binding, but would leave that to the individual taste of his hearers.

The President, in opening the discussion following the paper, said that his experience led him to prefer a reduction slide to one made by contact printing, as the lines seemed more distinct, especially when working with a plate of, say ¼ to ⅓, and employing a reducing camera.

Mr. Wyatt advised Mr. Mitchell if he wanted a change from the uranium tinted slides to try ferridcyanide of potassium and a ferric salt on a slightly over-printed slide, manipulating as with the uranium ferridcyanide and he would get a pretty blue tint suitable for moonlight effects. He proposed a hearty vote of thanks to Mr. Mitchell for his paper, which was seconded by Mr. Wokes, who speaking as an amateur photographer, said the members were much indebted to Mr. Mitchell for his practical paper. After Mr. Mitchell had replied to various questions on manipulation, the meeting, which was well attended, came to a close.

BRADFORD AND DISTRICT CHEMISTS' ASSOCIATION

A meeting of the above Association was held on Tuesday, November 17, at Leuchter's Rooms, Darley Street, to hear a lecture by Mr. T. H. Pattinson on "Alchemy and its Claims." Mr. E. Mackay, President, occupied the chair, and introduced the lecturer.

Mr. Pattinson, who has been a student of mysticism and occultism for twenty years, dealt with his subject in a masterly manner, touching on the different branches of the art, and explaining them in a most lucid way. The history of alchemy from very early ages was traced down to the present time. The efforts to obtain the "elixir vitæ," to produce gold from the baser metals, their study and knowledge of astrology and the affinity supposed to exist between the planets and plants and minerals on our earth, and their action on the different organs of the human frame were fully explained. During the lecture Mr. Pattinson handed round photographs illustrating the different points on which he touched.

On the motion of Mr. Silson (Treasurer), seconded by Mr. Dunn (Vice-President), and supported by Mr. A. H. Waddington, a hearty vote of thanks was accorded to the lecturer. Mr. Pattinson replied and answered one or two queries that had been put to him.

A vote of thanks to the Chairman, proposed by Mr. Pickard, seconded by Mr. Silson, terminated a most entertaining and interesting evening.

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION.

A meeting of the Plymouth, Devonport, Stonehouse and District Chemists' Association was held last Tuesday evening, Mr. George Breeze, J.P. presiding.

Mr. E. M. Holmes, of London, read a highly instructive paper entitled "Young Pharmacists." He said he was an old Plymouthian and he was indeed pleased to have had the opportunity of giving some practical advice to young chemists' assistants' in the district. He had had a lengthy experience in teaching, and trusted the few words he would impart would be well borne in mind. He estimated that only half the young men who went in for the Pharmaceutical Society's examinations were successful, and he attributed such to the fact that the students only aimed at passing the examination, whereas they should strive to gain sufficient knowledge to carry them successfully through business. It was a serious mistake to leave the study of scientific matters until they had completed their apprenticeship. By neglecting their scientific study it would put them behind about three years, and he advised the students to be very careful as regards dispensing, and never to absolutely rely upon the larger firms for sending them the right article, as chemists themselves were directly responsible. If they aimed beyond the examination, they would find no difficulty in passing it, and the lecturer urged that a reasonable amount of bodily exercise was essential in their studies. The earnest student showed capabilities which could not exactly be taken into account in the examination room, but which the general public would quickly perceive and appreciate. Their aim should be to become the best possible pharmacist, and whatever they had to do they should set about it with all their might.

The Chairman thanked Mr. Holmes for his pleasing and inspiring address, and regretted he was not in his young days so as to take advantage of the advice given.

Mr. O. A. Reade, of the Naval Hospital, Stonehouse, supported Mr. Holmes in his remarks as to the value of botanical rambles. Only a small number attended the botanical rambles which he conducted last summer, but he hoped to see an improvement next year. An idea had got abroad that botany was of little use to chemists, but he assured them that botany was of great value in the £ *s. d.* line, and also that they would be letting themselves down below the herbalist if they knew nothing of plants. Mr. Holmes had spoken of the necessity of exercise in the every-day routine, and he (the speaker) suggested that the botanical rambles were equal to any exercise they could put forward.

Mr. J. K. Bond congratulated Mr. Holmes on the high quality of his lecture, which he thought was worthy of printing and distributing wholesale throughout the United Kingdom. Those who carefully followed Mr. Holmes' advice were surely bound to meet with success. He presented Mr. Park's botany prizes to the following:—1, W. Hellyer; 2, A. Downing; 3, H. Vibert. Mr. Reade's prize for the best progress in the classification of plants was won by Mr. H. Vibert. The Association presented A. Downing and H. Vibert with monetary prizes for botanical work.

Votes of thanks concluded the meeting, Messrs. Park and Bond intimating their intention of giving further prizes next year.

WESTERN CHEMISTS' ASSOCIATION (OF LONDON).

ANNUAL DINNER.

The annual dinner of this Association was held at the Café Royal, Regent Street, London, on Wednesday evening last, when the chair was taken by the retiring president, Mr. J. C. Hyslop, who was supported by Mr. Walter Hills (President of the Pharmaceutical Society), Mr. J. W. Taplin (President-Elect of the Association), Dr. A. W. George, and a large company of leading pharmacists and their friends. An excellent dinner was served, and the toast-list was pleasantly interspersed with musical items which were admirably rendered by the St. Cecilia Vocal Trio, aided by Miss Blanche Walker, as pianist. The toast of "The Western Chemists' Association," by the Chairman, was briefly responded to by Mr. Taplin, whilst Mr. Hyslop's eulogistic recommendation of "The Pharmaceutical Society," was coupled with the name of Mr. Walter Hills. In his reply, Mr. Hills, who was received with considerable enthusiasm, referred to the fact that three important subjects were at present engaging the attention of the Pharmaceutical Council—the improvement of pharmaceutical education, extension of the scope of the Preliminary examination, and the revision of the British Pharmacopœia. The toast of "The Visitors" was responded to by Dr. A. W. George, and that of "The Chairman" was followed by the singing of "Auld Lang Syne," which brought an exceptionally pleasant evening to a close.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION.

OPENING OF THE SESSION.

The opening meeting of the nineteenth Session was held in the Pharmaceutical Society's House, 36, York Place, Edinburgh, on Friday, November 13, at 9.15 p.m. Mr. James McBain, President, in the chair.

There was a large attendance, including Messrs. J. Laidlaw Ewing, Chairman of the Executive and Board of Examiners; W. L. Currie, Vice-Chairman of Executive; J. Bowman, President of the Edinburgh District Chemists' Trade Association; D. MacLaren, Vice-President; Boa, Coull, Glass, R. L. Hendry, C. F. Hendry, and Macpherson.

Apologies for absence were intimated from Professors Gibson and Geddes, and Messrs. Forret, Lunan, McGibbon, Nesbit, and Storrar. The minutes of last meeting having been read and approved, the Chairman proceeded to deliver the—

Inaugural Address.

In this address Mr. J. McBain pointed out that the object of the Association is to educate its members in the widest sense, and so make them better members of an honourable calling, better citizens, better men. At the risk of being twitted with having chosen a threadbare theme, he made a few remarks on matters affecting education and also on business relationships, as affecting apprentices, assistants, and employers. Apprentices should begin their studies at once, and not delay if they would equip themselves for the ordeal which lies before them, and fit themselves for properly and intelligently performing the duties of the calling upon which they have entered. Those who have still got the First examination to face should begin at once to prepare for it and pass it at the first opportunity. Were it compulsory to pass the Preliminary examination before entering on apprenticeship it would be a great boon to apprentices. Those who have taken time by the forelock and passed the entrance barrier should begin at once to lay down the groundwork for their strictly professional studies. This they can do systematically by joining evening classes, and in this respect students are exceedingly well placed in Edinburgh, where the facilities for obtaining the requisite instruction equal, if they do not excel, those of any other city or district in the United Kingdom. It is wise not to attempt too much at first, and the work should be done methodically. During apprenticeship a competent knowledge of the various subjects with which pharmaceutical students are called upon to have an acquaintance can easily be acquired, and they will then be prepared to enter upon the special studies necessary to fit them for passing the qualifying examination, so as to be able to pass it as soon as they have reached the age at which they are eligible to present themselves. But study should not end with passing that examination, for if a chemist wishes to be proficient in his calling, and to keep abreast of the times he must be a life-long student. The work should be thorough; to cram up the subjects of examination instead of taking sufficient time to acquire the knowledge so that it will be lasting, and then to appear before the examiners only half prepared, in the hope that one may get through by some lucky chance, is undesirable. It is impertinence to ask examiners to certify one as qualified in such a case, and it will be a blessing in disguise if they detect the deficiency and refer a candidate back to his studies if he should be foolish enough to act so. Probably the great majority of failures in the examination room may be traced to this cause, and the abuse heaped on the examiners by some unsuccessful candidates would be more appropriately directed if it were levelled against themselves. The examinations are fairly conducted, and the candidate who knows his work has nothing to fear.

Apprentices, assistants, and employers were each in turn the recipient of much practical advice from Mr. McBain, who urged that the business of pharmacy is an honourable one, and each one connected with it can still further ennoble it by straightforward and upright conduct. It is a calling in which a man can gain a competent living and attain a fair social position, but he who enters it only with the idea of speedily amassing a fortune will be sadly disappointed, and had better turn his attention elsewhere. Like every other occupation it has its drawbacks, its troubles, and its worries, but some of these or the continuance of them is due to chemists themselves.

Mr. George Sinclair, Vice-President, in moving a vote of thanks to the President, said Mr. McBain had added to his already high reputation by the address they had just listened to, in which he had maintained the traditions of past inaugural addresses by emphasising the importance of education and a due regard to the dignity of their craft. He felt sure they would lay to heart the practical and homely truths which had been so well put before them. In these days of the progress of knowledge and keen competition it was the all-round man who would come to the front. There was one point in the address which had specially impressed him, and that was the way in which the true dignity of work, no matter how seemly humble and trivial, was brought out. It had been said that genius was an infinite capacity for taking pains, and he thought many failed to attain success because they neglected careful attention even to little details of work.

Mr. W. L. Currie, in seconding the vote of thanks, said he had great pleasure in being present to congratulate them on the large attendance at their opening meeting. He took a deep interest in all meetings connected with pharmacy. In Glasgow they had no separate meeting for assistants and apprentices, and all classes attended the meetings of the senior association. He was glad to see that in Edinburgh assistants and apprentices could themselves get up such a series of meetings as he saw shadowed forth in the syllabus which he had in his hand. A more sensible and practical address than the one they had just listened to he had seldom heard, and he endorsed almost every word of what had been said. Work well done always brought its own reward, and he would advise assistants not to delegate all the minor duties to apprentices, and make their lot a burden to them. He would also say do not rest satisfied with the Minor qualification, but go on to the Major. Personally, he regretted very much that he had not done so, and if time permitted he would do it yet. The man who possessed the Major certificate was fit to take any position. He would like to put in a word on behalf of those who had undertaken to provide papers during the session, and he hoped they would show their appreciation of the work of these gentlemen by coming out to the meetings in large numbers.

Mr. MacLaren said, as an old office-bearer, he might point out that they had a constitution by which chemists in business might also be members of this Association. He hoped the President's

desire as to the resuscitation of the Prize scheme would soon be accomplished, and he wished all success to the Association.

The Chairman then briefly acknowledged the vote of thanks.

The Secretary then read the report of the Prize Committee, from which it appeared that two essays had been handed in in competition for the Botanical Prize for the best report on the botanical excursions and summer meetings. The Committee had awarded the prize to Mr. William Center, 25, Ardmillan Terrace, who had handed in an essay of exceptionally high merit.

Mr. John Bowman, President of the Trade Association, in presenting the prize to the winner, said he had to thank the Association for the apportunity of being present. He had listened with great pleasure to the President's address, and his remarks would, he felt sure, be thought over and acted upon by the employers. He heartily congratulated the Association on the large attendance at their opening meeting. He then handed the prize—a copy of Reynolds Green's 'Botany,' vol. 1—to Mr. Center, and congratulated him on the excellence of his essay, and expressed a hope that he would be encouraged to persevere and gain more prizes in the future.

On the motion of the Chairman, a hearty vote of thanks was awarded to Mr. Bowman.

Mr. J. D. Sinclair was elected Assistant-Secretary, and Mr. J. L. Reid a member of Committee in place of Messrs. J. H. Burns and Alfred Thwaites respectively, who had left town. The meeting then closed.

EAST ABERDEENSHIRE CHEMISTS' ASSOCIATION.

ANNUAL DINNER.

The East Aberdeenshire Chemists' Association held it annual dinner on Thursday, the 12th inst., within the Station Hotel, Maud. Mr. A. M. Lee, Strichen, President of the Association, occupied the chair, while Mr. J. Johnston, Aberdeen, acted as croupier. After dinner the President delivered his retiring address, in which he advocated a higher standard for the Preliminary examination. He also dealt with the chemist's relationship to the medical profession, and spoke in favour of the Proprietary Articles Trade Association. Mr. Johnston spoke of the work at the Pharmaceutical Council, and referred to the late President, of whom he spoke in high terms. After some discussion, a motion fixing the annual subscription for 1897 was adopted on the motion of Mr. McGregor, Ellon. Mr. Cruickshank, Fraserburgh, advocated the further separation of the Minor examination into two parts, the business and the scientific, with two years interval between them. On the motion of Mr. Robertson, Fraserburgh, a cordial vote of thanks was passed to Mr. Johnston for his presence at the meeting and for his unfailing interest in the Association. Mr. James Walker, Ellon, was elected President, and Mr. J. F. Tocher, Peterhead, re-elected Secretary for the ensuing year.

OBITUARY.

WEBB.—On October 13, John Webb, Chemist and Druggist, of Dublin. Aged 32.

JACKSON.—On November 4, Vincent William Jackson, Chemist and Druggist, of Hartlepool. Aged 62.

NEWINGTON.—On November 10, Henry Plaisted Newington, Chemist and Druggist, of Tottenham. Aged 74.

SHERA.—On November 11, William Arthur Shera, Pharmaceutical Chemist, of Acton, after a short illness. Aged 31.

GULLIVER.—On November 12, William Gulliver, Pharmaceutical Chemist, of 6, Lower Belgrave Street, London, S.W., at 26, Rowfant Road, Balham. Aged 72.

SUTCLIFFE.—On November 12, Benjamin Sutcliffe, Chemist and Druggist, of Oldham. Aged 71.

KERR.—On November 13, George Jobling Kerr, Chemist and Druggist, of Derby Road, Huyton, near Liverpool. Mr. Kerr, who some years ago bought the business of the late Mr. Machin, was returning by train from Liverpool, and alighted in mistake at Roby; on attempting to get back into the train he slipped between the carriage foot board and the platform whilst the train was in motion, and received dreadful injuries, which were almost immediately fatal.

PATERSON.—On November 14, Stephen Paterson, Chemist and Druggist (of Messrs. William Paterson and Sons), Aberdeen. Aged 45.

LYLE.—On November 15, Mary Tait, wife of William Lyle, Chemist and Druggist, at Hyde Hill, Berwick-on-Tweed. Aged 37.

CORRESPONDENCE.

"THE AIM OF PRELIMINARY EDUCATION."

Sir,—The Irishman's rule in a shindy "when you see a head, hit it" still holds good, and when a pseudonym is hiding the owner there is a grim satisfaction in hitting it hard. If "Midlothian" would know what a "blind hurry" means let him watch a bull in the act of charging, and then say in what respect it differs from himself. Quoting Mr. Carter, I wrote "things that stand around," for aught that I can see, may also stand above or below or in any other position warranted by the Latin word "circum." Quoting me, this is how "Midlothian" renders it. "Lincolne, Senr." says "things that stand around may also stand above or (?) below." Here he stops. He does not give himself time to finish the sentence, or he might have been spared his ridiculous note of interrogation, and yet he denies he was in a hurry to attack, and complains that he should have been charged with garbling, since the word "is now used only in a bad sense and is misapplied" by me. But is it? Hazy in the use of inverted commas, he knows nothing at all of the hyphen, nor does he seem aware that it was his duty to insert one between "around" and "may" to indicate the omission of what he considers "unnecessary matter."

So much for garbling, and now for the misapplied quotation with which, and a characteristic comment, he closes his letter. In doing so, he must have had bumming in his head, Lamb's reply to Coleridge, who asked if he had ever heard him preach, and was told "I never heard you do anything else." He says: "It may also mean around, like an atmosphere, says your correspondent," and adds, "I do not think it can mean anything else, and I cannot imagine a body existing in an atmosphere being referred to as under it." But what about the "horizontal band" he had just before referred to? And if he cannot imagine a body under the atmosphere, can he imagine the atmosphere above a body? Perhaps it was a body "above" the atmosphere he could not imagine, and if so, he should not have said "under." "And now [brother] I wot that through ignorance ye did it," but it must not be done again, or what is now a blunder will risk being thought a crime.

Now for the conclusion of the whole matter, which seems to be that while a counsel of perfection is one thing, the practice of it may be quite another. We are indebted to Mr. Carter for calling attention to the prevalence of slipshod English, and for so strongly recommending that instructive and amusing Cobbett's 'English Grammar.' And possibly we disputants may profitably note the judicious warnings of Mr. Richards, lest we forget that "grammar is made out of language," and that in trying to be grammarians we may chance to become pedants.

Ely, November 12, 1896. LINCOLNE, SENR.

Sir,—I think we have quite sufficient proof in the correspondence before us that the etymologists could not agree among themselves, if to them were entrusted the revision of the English language. When we consider how much of force and beauty this last owes to its very imperfections, we need not be surprised to find some of the same corrupting influences causing the reformers to disagree with and among themselves. Nature will assert itself in the best regulated pharmacies and pharmaceutical councils, and although our feelings may be desolated for a time, sober reflection may lead up to the conviction that probably our ideals were not really so perfect as we believed them to be.

On the first page of any sixpenny dictionary there will probably be found a dozen obsolete words which have everything in the nature of etymological fitness to recommend them, while the only excuse that can be given for many irregularly formed words that survive and flourish is that they have fitness of a totally different, but still a superior kind. While, therefore, I believe the student would not be likely to regret the inclusion, along with the best hundred books, of the volumes recommended by Mr. Carter in his interesting address, it is to be hoped he would not use them to the neglect of the great classics, whether written in the grand style or in the familiar dialects of the East-end and the provinces, all of which illustrate practically how language can be employed to some purpose. For it should not be forgotten in this connection that Dr. Johnson, who was probably as learned in the matter of mere words as any scholar of his time, did not recommend the man who wished to acquire a good "English style to devote his days and nights to the study of"—etymology.

November 16, 1896. SCOTCH CHEMIST (64/10).

"The Aim of Preliminary Education."

Sir,—A Daniel has at last come to judgment in the person of Mr. J. C. Hyslop, and his dictum, as far as one can judge from a somewhat inconsequent letter, seems to be that fools rush in where angels fear to tread. As one of the "earnest learners who would be best occupied in asking questions," I should like to ask him what authority he has for his own rendering of one of the "beauties and virtues of our mother tongue." I have heard of "straining at a gnat and swallowing a camel" (A.V.), and, better, of "straining out the gnat and swallowing the camel" (R.V.), but what is this about "straining-off the gnats and swallowing the camel flies"? Is Mr. Hyslop also to be numbered among the "blind guides"?

Brighton, November 17, 1896. C. S. Ashton.

A Curious Experiment.

Sir,—The following experiment will probably interest some of your numerous readers:—Take a feather, hold it close to the eye, look through it at the hand (outstretched) held close to the globe of an ordinary incandescent gas burner; the shadows of the bones of the fingers will be seen similar to a photograph of a hand taken with the *x*-rays. A pheasant's feather was used for the experiment. Perhaps someone will be good enough to give their views upon this curious fact.

Guildford, November 16, 1896. T. L. I. (64/22).

Ashworth's Metallic Comb Brushes.

Sir,—I have a customer who requires a pair of Ashworth's Metallic Comb Brushes, No. 9, but the London wholesale houses do not now appear to keep them in stock. Can you or any of your readers inform me as to where they can be obtained?

Brighton, November 16. W. H. Smith.

Improved Means of Locomotion.

Sir,—"You needn't run off, it's not a fire," was the remark I overheard when passing a shop some half a mile from the Brixton Road on the morning of November 14. A stream of pedestrians was hurrying in one direction, 'buses and trams were full, and it was excusable that a small lad should jump to the conclusion that nothing less than a fire must be the attraction. But once arrived at the Brixton Road it was evident the surrounding districts had sent a large contingent to witness the first public exhibition of the new motor cars, for the streets were lined even more thickly than when a Royal procession passes with eager, if not enthusiastic sightseers. We missed, however, those peripatetic hawkers who relieve the monotony of waiting, and largely assist in keeping a crowd amused and excited. A few walking advertisers were to be seen, one bearing an ominous placard offering to ensure the multitude against motor car accidents; but there was no lack of interest and movement, for cyclists by the score were passsing up and down mounted on all sorts of machines. Unfortunately the night had been wet and the morning was cold and rather foggy, so foggy indeed that it was useless to think of attempting to secure a satisfactory photograph.

It was past eleven when the usual cry of "Here they come" passed along, and the first car came rapidly up the hill bearing two men, and attended by about fifty cyclists in club costume; it resembled a long trolly on low, but very broad, pneumatic-tyred wheels, its motion was fairly smooth, there was little noise, and the machine seemed well under control, and looked like business. Alas for appearances! this motor car, a sort of pilot engine, came to grief about half a mile further up the road, and ultimately reached Brighton several hours after the first arrival. Nearly twenty minutes elapsed, and then the main body came in sight, marshalled by mounted police, who seemed to have enough to do to keep their horses' legs safe and sound. Several of these cars resembled the pilot, but their wheels were larger; others looked like miniature locomotive tenders, elegance in construction seemed entirely overlooked; but there was a total absence of the electric 'buses everyone had come out to see, the nearest approach thereto being a couple of carts painted red, one conveying goods for a well-known store, the other labelled "Parcels Express" and bearing the name of a popular draper. The members of the Motor Club were arrayed in a more or less striking costume, the cap being a specially noticeable feature, probably suggested by portraits of the German Emperor when at sea, or the Royal owner of the "Britannia."

At this time the block of vehicles was very great, and the procession had degenerated into a go-as-you-please race, and but for the skill shown by the drivers or, more correctly speaking, "guiders," collisions and accidents must have been of frequent occurrence. Most objectionable was the benzoline-laden steam which blew into everyone's face, and must have been almost unbearable for the occupants of the machines coming just behind. Some of the cars, too, were far from noiseless. Just above stood a doctor's chaise, the horse a very steady lethargic animal, but when a car came along at a great pace, close to the kerb, and making a sudden sweep, passed almost under the horse's nose, it was scarcely to be wondered at that the animal backed and was held with difficulty. Clearly the motor of the future must be noiseless to be safe, and odourless to be agreeable. An electric cycle and tricycle (possibly several took part in the procession) were noticed; but the former must have been a failure, as its onward movement was varied by a succession of upward jerks, which must have proved unbearable long before the 52 miles had been traversed. As the last red cart passed out of sight I escaped by a side street, with the conviction that these "Puffing Billies" had a future before them, and that, after all, my out-of-date tricycle might once more take the road driven by benzoline or electricity.

London, November 17, 1896. P. H. T. (64/35).

ANSWERS TO QUERIES.

Glycerin Jelly.—Best gelatin (gold thread), 160 grains; rose water, 6 ounces; white of one egg; glycerin of borax, 2 ounces; glycerin, 4 ounces. Soak the gelatin in the rose water for half an hour, dissolve on the water bath, then add the white of egg, and boil briskly for five minutes. Now add the glycerins and filter bright through flannel on a hot water funnel. If you want a carbolated preparation, substitute one ounce of glycerole of carbolic acid for the glycerin of borax. A little eau de Cologne or Jockey Club improves the preparation. These perfumes should, of course, be added after boiling. [*Reply to* S. W.—64/33.]

Comparative Cost of Living in London and Edinburgh.—Living at Kensington, you ought to be able to form your own estimate of the "inclusive cost of living in London to pass the Society's examinations," bearing in mind that some devote six months and others two years to this task. Concerning Edinburgh expenses, we can only appeal to Scottish readers. Certainly it ought to cost students less to live in Edinburgh than in London. [*Reply to* E. N.—64/14.]

Ol. Rusci.—You can readily obtain a lighter coloured oil from your dark specimen by redistilling it from a sand bath, using a long piece of combustion tube as a condenser, and of course no water surrounding it. The lighter-coloured distillate gradually goes darker by exposure to air and light; if kept in amber glass bottles well corked, it will remain light coloured for some time. You could obtain it freshly rectified from any of the firms who advertise it as a specialty. [*Reply to* A. L. R.—63/34.]

A large number of Answers to Queries are unavoidably held over until next week.

NEWSPAPERS sent to the Editor should have the paragraphs marked to which it is desired to call attention. Copies have been received during the week of the following:—*Brixtonian, East Cumberland News, Oldham Evening Chronicle, Sunderland Daily Echo, Oxford Chronicle and Berks and Bucks Gazette, Henley and South Oxfordshire Standard, Liverpool Mercury, Jersey Times and British Press, Daily Mail, Harrogate Herald, Manchester Guardian,*

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Anderson, Anning, Austen, Bird, Bottle, Boyd, Braithwaite, Burrell, Butler, Chapman, Christy, Clower, Crofts, Cummings, Druce, Fraser, Gulliver, Harker, Harris, Hay, Hill, Idris, Inman, Jackson, Kirkby, Lincolne, Llewellyn, Lyle, Matthews, M'Knight, Morgan, Moss, Naylor, Nickolls, Nursaw, Park, Philip, Plumbly, Powell, Price, Prosser, Radlkofer, Reynolds, Robertson, Robins, Shattock, Skinner, Smith, Stagg, Strachan, Thorp, Tocher, Wood, Woodruff.

ROYAL COLLEGE OF 27 NOV 96

"THE MONTH."

Calcium Carbide. The importance which this compound has rapidly attained as a source of acetylene lends especial interest to some remarks of J. Swinburne, in the course of a Cantor lecture recently published. The future of the carbide, he pointed out, depends very largely on its cost of manufacture, but it is very absurd to take the cost of coal, lime, and energy, and calling that the cost of the carbide, to compare the cost of a candle-power hour with that of gas as charged to the consumer. Assuming the final price of the carbide to be £10 per ton, this will correspond to 18*s.* per 1000 cubic feet of acetylene, allowing 5 cubic feet per pound. But coal-gas can be produced at 1*s.* per 1000 cubic feet, and deducting the value of bye-products this can be reduced to a few pence. It is even doubtful whether it will pay to enrich coal-gas by the addition of as little as 3 per cent. of acetylene. Moreover, acetylene damages gas stoves and fittings in an inordinate degree. Add to this the risk of explosion in the acetylene generator or cylinder, and the prospect before anyone attempting to improve his lighting by the use of acetylene is not very promising. At the same time, in country houses, carriages, omnibuses, trains, and on board ship, its introduction may prove advantageous, and the use of calcium carbide should become very general in such cases. The generators, however, must be very simple, and there is great need of a good portable acetylene lamp. —*Journal of the Society of Arts*, xliv., 843.

Acetylene as an Explosive. Berthelot and Vielle, whose paper (*Comptes rendus*) was briefly referred to last month (*ante*, p. 378), find that at ordinary pressures it is impossible to cause more than a local dissociation of acetylene by an electric spark, a flame, or an explosion of fulminate. If, however, the gas be compressed beyond two atmospheres, the dissociation, if once started, is propagated without sensible diminution throughout the whole volume of gas. The acetylene splits up in a closed tube into pure hydrogen and a friable mass of carbon which forms a cast of the containing vessel and can be withdrawn intact. The explosion develops a ten-fold pressure at a pressure of twenty atmospheres, the temperature due to the explosion being then 2750° C. Liquid acetylene exhibits the character of a high explosive, but mechanical shock fails to explode either the compressed gas or liquid acetylene, though a spark from the breaking metal was found sufficient to ignite the gas escaping from a cylinder that was allowed to fall. Danger may arise in generating from calcium carbide by using too little water, the carbide becoming incandescent and causing detonation of the gas. Sudden compression of the gas in filling cylinders, or in admitting it into a reducing valve, is also dangerous. On the whole, however, Berthelot and Vielle think the advantages of acetylene as an illuminant outweigh its dangers. Unfortunately, it has been pointed out, this expression of opinion was penned prior to the disastrous explosion at Pictet's factory, and it is, therefore, not likely to carry such weight as if that accident had not occurred.

Argon and Helium Dr. B. Brauner is not in accord with those chemists who regard argon and helium as elements, but rather inclines to the view that they are naturally synthesised substances which behave as such, helium consisting of two distinct pseudo-elements. Argon he regards as an allotropic state of nitrogen, and he thinks that the recent research of Ramsay and Collie, on the separation of the constituents of helium by diffusion, makes it highly probable that it consists of two substances possessing molecular weights of 3 and 5 respectively in the pure state. The original protylic matter of these two pseudo-elements would appear to be hydrogen, and Brauner suggests that the enormously important bearing of Ramsay's discovery lies in the point that the constituents of helium were formed from hydrogen in accordance with Prout's hypothesis. The molecular and atomic weights of these three assumed element-like bodies would be alike—3, 5, and 40—and the objection that three atoms of nitrogen and three or five atoms of hydrogen cannot unite according to the "laws of valency," is anticipated by the author, who asks, "did protylic matter, of which our elements were formed, as admitted by many chemists, follow the 'laws of valency'?"—*Chemical News*, lxxiv., 223.

Differentiation in the Röntgen Rays. T. C. Porter, writing on the production of X-rays by a Wimshurst machine, mentions facts which seem to prove that those rays are not invariably the same. That there may be two different kinds of X-rays has been already suggested, but the evidence now available seems to indicate the existence of three distinct varieties. The X-rays, which penetrate flesh, but to which bone is fairly opague, are those more generally known. When the tube offers less resistance to the electrical discharge—as indicated by the phosphorescence produced by the impact of the molecules on the glass becoming evenly distributed, whilst the tube becomes hot—the X_2-rays are emitted. Wood is transparent to these, but flesh is opaque. Under some conditions, however, a tube is capable of emitting rays to which bone is almost as transparent as flesh. These are termed by Porter X_3-rays. He finds that it is quite easy to cause a tube to emit either X_1, X_2, or X_3-rays, and not only so, but the change from X_2 through X_1 to X_3 is perfectly continuous. It appears probable, therefore, that these varieties "differ, not in kind, but only in some one inherent quality, such as frequency, which varies continuously."—*Nature*, lv., 30.

Manufacture of Woad. The use of woad as a source of indigo is now very limited, and most people probably imagine that it died out a thousand years ago or more. Woad appears, however, to be employed yet by some old-fashioned Yorkshire dyers, who use it in conjunction with ordinary indigo, in the so-called "woad vat." Francis Darwin and R. Meldola have recently visited an English woad mill where a primitive method of manufacture is yet conducted. At Parson Drove, near Wisbech, the leaves of the plant (*Isatis tinctoria*) are wrenched off at the base by the pickers, the root being left undisturbed so as to permit the growth of a second crop. The first process consists in crushing the leaves to a pulp under three hollow wooden rollers, round the circumference of which about two dozen iron cross-bars are arranged to serve as effective crushing edges. The resulting pulpy mass is kneaded by hand into balls which are then placed on wooden trays to dry in open sheds. When dry they are again ground up under the rollers, and the crushed material is allowed to ferment after sprinkling with water. This final stage completed, the woad is ready for market. The object of first drying the pulp and then wetting it again before fermentation is not obvious, but the fermentation itself is probably a zymolytic decomposition of glucosides.—*Nature*, lv., 36.

Antivenene in Snake Bite. Surgeon-Major Rennie describes in the *British Medical Journal* a case of supposed cure of snake-bite in India. A Hindu boy was drawing water from a well, and in returning, accidentally trod on a snake, which bit him on the right foot. Two men were with him, and both saw the snake but were unable to kill it before it disappeared in the grass. They

promptly bound the end of a puggaree round the boy's leg, and picking him up ran with him to the doctor's quarters. Not more than three minutes having elapsed from the time he was bitten until he was under medical observation. The typical imprint of a snake-bite, with its two deep fang punctures and the crescentic row of small teeth marks, was plainly visible on the inner side of the right foot. At once 8 C.c. of Calmette's antivenene serum was injected into the subcutaneous cellular tissue of the abdomen, and at the same time the wound was treated with hypodermic solution of permanganate of potash. The patient was placed under observation, and never had a bad symptom, and at the time of writing was running about well. The testimony of the men was practically conclusive as to the snake having been a krait, one of the most dangerous Indian snakes.

Tidal Action and Electricity.

In an article on alkali making by electricity, C. F. Townsend remarks that it is really astonishing to think of the vast revolution the introduction of electrical energy will effect in our industrial life. The whole conditions of life in the country will be changed. Water power will replace coal as the prime source of energy, and factory chimneys disappear in a great measure. The water power of the tides running to waste round our coasts is enormous, the power of the tides running past Bristol alone being sufficient to drive all the alkali works in the kingdom half a dozen times over. The task of providing this water power, he suggests, might well be undertaken by our great maritime municipalities or county councils. Large storage reservoirs should be built at the high-tide level, and these would fill at the flood. The water would gradually run down to reservoirs on low ground, which would be emptied at the ebb. By means of turbines and dynamos this power could be transformed into the electric energy current, which would turn all the machinery in a city—if not in a whole county—besides lighting and heating the private houses and public buildings. As our stores of coal diminish and the depths of the existing shafts have to be increased so much that the cost of getting the coal will be very much augmented, utilisation of the natural powers of the tides and rivers will enable us to eke out our supplies of fuel to an almost indefinite extent, and countries like our own with a large coast-line, round which run strong tides, will still lead the van in industrial progress.—*Knowledge*, xix., 247.

Hyacinth Bulbs and Eczema.

A correspondent of the *Gardener's Chronicle* recently pointed out that those who have to do with the unpacking of hyacinths when received from Holland, even when each bulb is wrapped in paper and packed without buck-wheat husks, have frequently experienced a good deal of skin irritation when the bulbs touched any portion of the face with the hands. Many years ago, when he was in one of the large wholesale seed houses, large numbers of hyacinths used to be handled by him, and always with this result, the effects being the same with ordinary hyacinths as of those of the Roman type, whilst in dealing with the various kinds of bulbs it was found there was more of this irritation from the hyacinth bulbs than from any others. It is suggested that in the act of handling the bulbs almost infinitesimal particles of the soil in which the bulbs have been grown, attaching themselves to the fingers, are conveyed to the face and neck. But, from some experiments made in the Jodrell Laboratory at Kew, it appears that both dry and moist scales of the bulbs are capable of producing considerable irritation in certain cases when applied to the skin, this being apparently due to the abundance of acicular raphides present. At a meeting of the Linnean Society this month, Dr. Morris referred to the matter, and exhibited specimens (see p. 466). He showed that these needle-shaped crystals (composed of calcium oxalate) vary from 1/100th to 1/200th of an inch in length, and are arranged in close bundles, which are easily dispersed by rubbing the dry scales. In the growing plants they are doubtless protective, as snails, for instance, avoid hyacinth bulbs but attack others growing close by. Roman hyacinths (var. *albulus*) are understood to cause greater irritation than other varieties.

The Oxygen Cure.

Some remarkable results have been obtained in the treatment of wounds by exposing the affected parts to the action of oxygen gas, either alone or diluted with air. G. Stoker (*Brit. Med. Journ.*) describes how bacteriological examination of wounds, before and after this treatment, shows that oxygen destroys some micro-organisms that are present, and encourages the growth of others which are characteristic of healing wounds. As a result cures are rapidly effected by this method, and Mr. Stoker is of opinion that it heals in less time than any other form of treatment, allaying pain, stopping foul discharges, forming a healthy new skin, and being far more economical as regards suffering, and less expensive pecuniarily. This oxygen treatment has been taken up by an influential committee on which are found the names of the Baroness Burdett Coutts, Lady Wolseley, Lady Hamilton Gordon, Sir Francis and Lady Osborne, Lady Nottage, Mrs. Joscelyn Bagot, Major-General Sir Francis de Winton, Sir John Hassard, Canon Teignmouth Shore, Mr. Burdett Coutts, M.P. (Chairman of the Committee), and Mr. Stoker. This Committee, desiring to afford opportunities for the development of this treatment, has resolved on the establishment of a home at which patients may be received, and medical men and nurses initiated into the details of the system. The present establishment, 35, St. George's Square, S.W., has to be vacated shortly.

Jumping Cocoons.

Dr. D. Sharp describes some cocoons, sent from South Africa, which more than rival the celebrated jumping beans in athletic power (*Entomologist*). Thus, they were able to spring out of tumblers in which they were placed, the motive power being apparently due in each case to the contained pupa. On the front of the pupa's head is a sharp chisel edge to enable it to cut its way through the hard, pottery-like cocoon. On contracting itself to the utmost in the posterior part of the cocoon, and retaining itself in that position by hooks on the mobile parts of its body, the pupa is in a condition of elastic tension, and on releasing the hold of the hooks, the pupa is discharged forwards, so that the chisel edge strikes the front part of the cocoon. By repeating this operation a number of times the end of the cocoon becomes weakened and the insect is liberated. The jumping of the cocoon is, of course, due to the shocks communicated by the pupa.

Histology of Senna.

L. E. Sayre has experimented with a view to being able to distinguish between Alexandrian and Indian senna in powder. Alexandrian senna is more hairy than Indian, a mixture of equal parts of the two in No. 60 powder containing ten hairs of the former to one of the other variety. The hairs of Alexandrian senna have a sharp curve near the base, while those of Indian senna are straighter, shorter, and stouter. Almost invariably the hairs of both kinds remain unbroken when the drug is powdered, and these distinctions may therefore be of practical value. The epidermal cells also differ in form, those of Indian senna being somewhat smaller and more uniform in size, whilst the angles are more acute than in the Alexandrian variety. Careful measurement of the cells gives the following average results:—Indian senna, 35 micra in diameter; Alexandrian senna, 40 micra in diameter.—*Am. Journ. Pharm.*, lxviii., 585.

Mercury Floating on Water. C. E. Stromeyer describes in *Nature* a method by which he was able to make mercury float on water. A few drops of mercury, half an ounce of water and a pinch of red lead, red oxide, vermillion or other red powder were shaken together in a small cylindrical bottle. A few small globules of mercury were then found floating together at the centre of the water surface. By repeated shaking a small dish—about 3/8 inch in diameter and 1/16 inch deep—was formed, consisting of a large number of mercury globules, and this floated on the water in the same position. The dish did not disappear if allowed to rest, and always re-formed after shaking the bottle.

Electricity from Niagara. On the fifteenth of this month the machinery erected at Niagara Falls for the production and distribution of electric power was set in motion, and the city of Buffalo, twenty-six miles away, began to reap the advantage of the energy and foresight which will probably result before long in the entire abolition of horse and steam power in the district. The street tramcars are now being worked by electricity thus supplied, and Buffalo manufacturers are anxiously awaiting supplies. Altogether, the city has contracted for 10,000 horse-power from Niagara, and it is anticipated that smokeless factories will in time cover the whole of the intervening district.

Determination of AmCl in Tablets. Practically concordant results in the determination of ammonium chloride have been obtained by A. B. Johnson, by crushing a few tablets, weighing a portion of the powder, placing it in a flask with water, adding sodium or potassium hydrate to render alkaline, and distilling into decinormal oxalic acid solution until two-thirds of the liquid has passed over. Finally, titrate with decinormal potassium hydrate, using rosolic acid as indicator, calculate the amount of ammonia formed into chloride, and determine the percentage from the weight of powdered tablets taken. The chlorine is determined by mixing a weighed portion of the powder with four or five times its bulk of chlorine-free calcium carbonate, and heating in a hard glass tube to low redness until all carbonaceous matter is consumed. Water and nitric acid are added to the residue, and when effervescence has ceased, the chlorine is determined as silver chloride.—*Am. Journ. Pharm.*, lxviii., 608.

Thiosavonal. Under this name Mutter and Grube report upon the soaps produced by treating thiol with appropriate alkaline lyes. Neutral thiosavonal is prepared by saponifying an alcoholic solution of thiol with the slight excess of alcoholic potash solution; the alkaline solution should be added gradually, otherwise sulphur may be precipitated. Saponification is complete when a portion of the liquid dissolves bright in water or in alcohol. When this point is reached the excess of alkali is neutralised with an ethereal solution of a fatty acid. The alcohol is then distilled off, and the residue brought to an unctuous consistence. If the evaporation of the soap is carried only to a syrupy consistence the product is called "Thiosavonal liquidum." Both these preparations are readily miscible with large quantities of oleum rusci, and both are stated to be very effective. —*Pharm. Centralhall*, 1896, 717.

Viscosimeter for Gums. Lunge describes, in the *Mercure Scientifique*, a simple instrument by means of which the relative viscosity of solutions of gums can be readily determined. The principle of the working of the instrument depends on the time taken for a given body to sink in a liquid. The apparatus is, in fact, a hydrometer, consisting of a glass tube 20 M.m. in diameter and 100 M.m. long, terminated by a narrow stem 8 M.m. in diameter, and 125 M.m. long. This smaller tube is graduated from 1·050 to 1·400, corresponding to the densities indicated by those figures. The total weight of the instrument is about 39 grammes. The gum solution, brought to about 15° C., is placed in a cylindrical glass and the viscosimeter allowed to sink in it up to the mark 1·200; it is then withdrawn and allowed to drain for three minutes, being held above the solution by a small clamp fixed to a stand; the extremity of the instrument is then adjusted to exactly touch the surface of the liquid, the time taken with a seconds watch, the clamp released, and the time again taken when the number 1·200 is reached on the stem. This method affords very useful data in the examination of gums.

Isanic Acid. The seeds of a large tree known as ungueko, and obtained from I'sano in Loango, have given Herbert ten per cent. of a new acid. The seeds yield to benzene a reddish, viscous, rapidly-drying oil, containing 86 per cent. of liquid fatty acids, the lead salts of which are soluble in ether; they are separated by fractionally precipitating the ammonium soaps with barium chloride; they consist of 15 per cent. of oleic acid, 75 per cent. of linoleic acid, and 10 per cent. of the new solid (isanic acid). It forms large flaky crystals, soluble in most organic solvents; it has a peculiar odour, is inactive optically, and is not volatile in steam. When exposed to the air it alters rapidly and oxidises to a rose-coloured compound which is insoluble in ether and is very stable. Cryometric determinations give the molecular weight of 217, and it seems to have the composition $C_{14}H_{20}O_2$.—*Journ. Chem. Soc., Abrs.*, lxx., *Org. Chem.*, 638.

Transformation of Mercury Salts. It has been ascertained by S. Hada that if cold solutions of mercuric nitrate, acetate, or chloride be shaken with mercury, the salt is at once reduced to the mercurous state. On the other hand, mercurous nitrate or chloride in boiling water is converted into the mercuric salt and mercury. Such salts are also dissociated at the common temperature by strong daylight, the effects being very marked in the case of mercurous acetate.—*Proceedings of the Chemical Society*, 169, 182.

Toxicity of Orpiment. Although orpiment is generally regarded as a virulent poison, Fleury does not consider that, when pure, this is correct. He finds that commercial orpiment invariably contains free arsenious acid, which gives it toxic properties. Having prepared some pure arsenious sulphide, he administered two doses of 25 centigrammes to a medium-sized dog. No observable effect was produced on the animal when this quantity was mixed with his food. Probably in the presence of an alkali the effect would be poisonous.—*Bullet. de la Soc. de Pharm. de Bourd.*, xxxvi., 309.

Preventive of Mites. The following solution is recommended (*Gaz. Médic. de Liège*) for the prevention of mites:—Turpentine, 50; strong methylated alcohol, 850; naphthalin, 20; phenol, 20; camphor, 50; oil of patchouli, 5; essence of mirbane, 5. But by far the best preventive of mites in herbaria or entomological collections is solid naphthalin. A lump of this in the bottom of the drawer will preserve dried insects perfectly, and even when they are attacked by mites will drive them away.

A New Explosive. By further acting upon dinitro-cellulose, or ordinary soluble pyroxylin, by means of a mixture of nitric (1·5) and sulphuric (conc.) acids in equal parts, a true trinitro compound is produced. H. N. Warren finds that by again treating the product with a still more energetic dehydrating agent, consisting of equal

parts by weight of commercial vitriol and phosphoric anhydride, another nitrogenous compound is obtained. After washing and drying, this is much more brittle than the preceding compounds, and will explode by mere percussion. Digestion in a strong solution of potassium chlorate renders it still more brittle, and it is then readily pulverised and forms a true percussion agent. The new explosive appears to be a tetra-nitro compound, and when submitted to destructive distillation, in contact with moist caustic potash, it evolves hydrogen gas, together with large quantities of methylic alcohol.—*Chemical News*, lxxiv., 239.

Root Tubercules of Leguminosæ.

M. Nauder has recently expressed some doubt as to the alleged power of microbes in these growths to effect the fixation of nitrogen, *Robinia*, *Cerus*, *Gymnocladus*, etc., are cultivated with success without, it would seem, any bacterium special to them. Seeds have been sown in soil which had been subjected to prolonged boiling in order to kill the microbes but plants grown in soil thus sterilised germinated more rapidly and the seedlings were more vigorous than those grown in ordinary soil.—*Gard. Chron.*, November 21, p. 631.

Chemical Cure for Apple Canker.

Chemists living in agricultural districts may find the following formula, published by the well-known Mr. Rivers, of Sawbridgeworth, for the cure of the canker affecting the trunk and branches of the apple, of some service:—Calcium superphosphate, 12 lbs.; potassium nitrate, 10 lbs.; calcium sulphate, 8 lbs.; sodium chloride, 4 lbs.; ferrous sulphate, 1 lb. Mix and apply the mixture at the rate of 4 ozs. to one square yard of land.—*Gard. Chron.*, November 21, p. 630.

Mushrooms in Air Analysis.

Dr. T. L. Phipson finds that a specimen of *Agaricus atramentarius* placed under a graduated bell-glass containing air and standing over water, gradually removes all the oxygen present in the air. The carbon dioxide produced is dissolved in the water, and the mushroom dries up when nitrogen alone remains in the bell-glass, becoming mummified as it were. But if before vitality is extinct a green plant, such as *Lysimachia nummularia*, be placed alongside the mushroom the latter slowly recommences to vegetate, the oxygen required for the purpose being supplied by the green plant.—*Chem. News*, lxxiv., 247.

Formalin as a Disinfectant.

Trétrop considers a 2 per cent. solution of formalin to be one of the best antiseptic solutions, having obtained good results with it even in several cases where other preparations had proved inefficacious. Irrigations and dressings with this solution rapidly stop the formation of pus, keep wounds in an aseptic condition, and favour rapid healing.—*Bull. gén. de Thérap.*, cxxxi., 376, after *Journ. Méd. de Brux.*

Antibacterine.

This new germicide, brought forward as a special remedy in tuberculosis, is stated to be an ethyl compound of orthoboracic acid, containing also iron. It is a non-poisonous yellowish-green fluid, and is administered in the vaporous condition, as an inhalation; it is found that when so employed the exhalations contain boric acid. The patient should commence with ten inhalations per diem, gradually increasing the number up to 120.—*Zeits. Oest. Apoth. Verein*, xxx., 792.

Waterproof Glue.

Sandarac and mastic (of each 231 grains) are dissolved in a pint of alcohol mixed with 231 grains turpentine and heated to boiling. The solution is then added gradually to a hot concentrated solution of equal parts of glue and isinglass, stirring meanwhile and until a thin paste is formed that can be filtered and used like ordinary glue.—*Pharm. Centralh.*, xxxvii., 725.

THE REALITY OF FOREIGN COMPETITION.

FROM A MANUFACTURING CHEMIST'S POINT OF VIEW.

BY "COSMOPOLITAN."

If there is one fault to be found with the ably written article in the Journal of October 31, it is that you do not tell the whole truth, and though the facts I propose to state may not prove pleasant reading to many, perhaps they may awaken one or two out of the false security in which they are living. Unless a great revolution takes place in the general manner of doing business in this country we shall very soon have any amount of young chemists really deserving that name, but no occupation for more than about five per cent. of these, who may have spent their youth up to, say, their twenty-second year in acquiring proficiency in one of the many branches of this interesting science. For the majority of even the largest English manufacturers have an inherited aversion—not to the temporary employment of a good skilled chemist, if they think they can profit thereby—but to the permanent employment and liberal payment of a staff of experienced chemists.

My experience of approaching forty years has taught me that the British manufacturer only thinks of looking out for improvements in his special industry when he finds his trade falling off, not before. While he is doing plenty of business without taking much trouble, he never looks beyond the tip of his nose. He is the most independent man in the world; if his customers ask him what he can offer to them, he very often does not even take the trouble to reply to the letters. If such an enquiry comes from a buyer who has once or twice asked for a quotation but been prevented from accepting the offer made, this poor individual is sure not to get a reply, as his name has been put on the black list as of being no use. The manufacturer does not take the trouble to try and find out why the unlucky customer did not order. Only when he is losing trade does he begin to wake up, and only does so thoroughly when he finds that the trade has gone abroad.

Even then for a long time he is attributing the cause to unfair competition, cheaper labour abroad, and many other causes, in fact everything except the real cause, which is that, instead of continually striving to keep up and enlarge his trade—a comparatively easy matter, particularly when business is good—he waits till it has drifted into some other channel.

But to recover business is a matter of very great difficulty indeed, as every man of experience well knows. If the manufacturer only tried to extend his operations at the time he was really not in need of extra business, he would have remained in touch with the requirements of the time, and known what his competitors were doing or trying to do. As he has not done so it takes him a much longer time to find out first, where he is at fault, and, second, where and how he can improve his goods and cheapen their manufacture. When at last he has found out, or is on the way to find out, he experiences very great difficulty in remedying the matter.

In most instances he will purchase some new plant. Let us assume for a moment that he hits upon the right one of the many manufactures among which he has to choose, and that, further, he has reluctantly engaged the services of a good and clever chemist, as soon as the new plant and the new and improved process are working well our manufacturer begins to regret that he has to pay to the new chemist as much as he has been in the habit of paying for years past to his foreman and perhaps a dozen workmen. He begins to say to himself, "Well, the thing is very easy, and we can now do without the chemist." The chemist is discharged and the foreman gets an extra half crown per week, but after a very short time things begin to go wrong. Now comes the critical time, during which the manufacturer experiments in the factory. Had he kept the chemist and a laboratory sufficiently equipped for his purposes

a few days would probably have sufficed to set things right, without incurring any expense. Instead of this, however, the foreman spoils perhaps a whole batch of goods, of a value equivalent to twice the yearly salary of the discharged chemist. Very often the errors committed are only discovered after the goods have been sent out, and this leads me to point out that most manufacturers, in cases where such complaints are forthcoming, are very reluctant to admit or even investigate complaints.

The first thing when a complaint comes, even from their best customer, is that they say, "Oh, the goods have gone out of the country; we cannot be held responsible after they have been shipped." Even if you give them actual proof that, say, iron has been shipped instead of steel, they will not admit their error, but maintain "the goods were steel when sent; the journey or voyage must have changed them into iron." A Continental maker will very often send a special skilled person any distance to investigate complaints. The English manufacturer only grudgingly, and after a long time, admits a mistake, very often when it is too late. The following case occurred in my own experience:—After much trouble I convinced a manufacturer that by adopting an improved mode of working he could obtain an increased yield of about 50 per cent., and with less cost. For teaching him the process and allowing him the use of same I asked him about one-third of the saving for five years. This would have included superintendence by a skilled chemist during these five years, and therefore assured good working. Though the offer was repeated annually for many years, this manufacturer has not only declined to accept it, but he has actually gone on losing for ten years rather than accept the offer. He has always said "We would rather lose than be dependent on anybody." This of course was all moonshine, as no state of dependency would have existed. Moreover, I have shown some of the largest manufacturers how they could very materially increase their profits by adopting new processes actually in work on the Continent; I have given them actual figures based on such work, and made their acceptance of my offers dependent on their investigating the process and working figures in the foreign factories. But whilst not disputing the correctness of the figures, they have considered the travelling expenses a bar to investigation, though the business would have yielded thousands of pounds of profit.

I could give dozens of similar instances. What the English manufacturer needs is a system of thorough, exact, and systematic working. It is very seldom that the English manufacturer takes the trouble to keep an exact account of what each of his stills, boilers, etc., is actually doing, and at what expense in fuel, labour, etc., etc. While manufacturing operations prove successful, and are carried on simply by working large quantities and at large profits, this neglect of proper control may mean only a little more or less profit. When, however, profits can only be made and losses avoided by very exact working, the case is different. Even the best machinery and manufacturing processes are very often of little use if they are not worked very carefully and continually. I know of many instances where a week's working has been lost through lack of care during about a quarter of an hour. On inquiring into the cause of such losses, which are sometimes serious, one gets the reply, "Well, we thought that five degrees more (or less) would be better or would not matter." I have once kept eighteen chemists for as many months employed, not for the purpose of teaching about a dozen manufacturers to work a new process which would give them enormous profits, but simply for the purpose of impressing them with the necessity of working the process according to my own instructions, instead of according to their own notions.

Now let us try to see why Continental makers progress rapidly in many directions while we in this country go back. Most people say "Oh, yes! labour is ever so much cheaper over there." That is true to some extent, but on the other hand, a good English workman gives far more labour in proportion for the better pay he obtains. Coal on the other hand is cheaper in England, whilst as the winter on the Continent is much more severe than over here, manufacturers have to erect much more substantial buildings, at much greater first cost and expense in keeping up. These two disadvantages more than outweigh the advantage of cheaper labour. Now if we take skilled labour and salaries, and the share of profits given to chemists, the total expense is infinitely greater on the Continent than here. The large works at Ludwigshafen, Hoechst, Elberfeld, Stollberg, Crefeld, etc., etc., employ small armies of chemists. They each have one laboratory fitted out in the most thorough manner for investigations only. Not only are new inventions thoroughly investigated there, but all the processes employed in the factory receive continuous attention, in order to ascertain where improvements can be made or saving effected. There is an inducement held out to the chemists, viz., a share in the profits of new inventions they make if they prove profitable, so that all are very anxious to find out something new. The work done in this laboratory, whether successful or not, is all duly recorded in writing, and the records are kept in well-registered files for future reference. A great deal of work is often saved by simply referring to what has been done many years before. The work done in this scientific investigation laboratory is submitted to the head chemists and managers, and if anything seems likely to be profitable it is passed on to another experimental laboratory, where the process may be carried out on such a scale as to give a proper basis for working on a manufacturing scale. This, according to the nature of the article, may be pounds, hundredweights, or tons.

It is very often found, in working in this small factory, that an invention which has shown very favourable results in the scientific laboratory will not work at all on a manufacturing scale, and in such instances, of course, it is finally, or provisionally, dropped, as the case may be. Sometimes the failure suggests to the first experimentalist the way to improve his method, and in such instance the second laboratory tries again. Only inventions and improvements which have stood this test and are approved by the principal chemists are introduced into the factory, and it does not want much argument to show that, though at first sight the method described may appear costly, still for a large factory it is much the cheapest in the long run. This principle once recognised, it will be apparent that even in small factories it can be applied advantageously. Of course, many of the small works are not able to employ regular chemists; but if when in difficulty the proprietors consulted proper scientific chemists, of whom even now we possess many in England, they would find that this way of going to work will save the necessity of experimenting in their factories, which, as I have stated before, is generally the most unsatisfactory and expensive plan.

Now, I beg to make the following suggestion. At present we are educating more skilled workmen and good chemists than we shall be able to employ, because it will take a longer time to find berths for them than to educate them. Would it therefore no be possible, by diverting some of the public and semi-public funds which are becoming more considerable every year, to assist such manufacturers as require information about their own line of business? If, for instance, a staff of gentlemen, experienced in the various lines of business, could be associated with the Imperial Institute, the latter might really become of the great national utility its promoters anticipated. Even the ministries of continental

Europe, all entangled with red tape as they are, have lately introduced into their commercial and colonial departments gentlemen of commercial experience, and the same plan would work much better in this country, as there are a great many more individuals available for such positions. By such aid many places might be found for the skilled chemists and artisans whom we are trying now to educate.

THE PHARMACIST'S LIBRARY.

A List of Useful Works of Reference.

It is not an infrequent occurrence for a pharmacist to be in want of information which the stock of books in his possession is unable to supply. A query addressed to the Editor of the Journal or to the Librarian of the Pharmaceutical Society is a common sequence to this difficulty, with, generally, a satisfactory result. But the need of proper books at these times is strongly felt by the pharmacist, and it has been thought that a list of such works as have been found helpful in answering the requirements of persons seeking information would be useful to many readers, even if they could not afford to buy all the books.

One continually recurring stumbling block in the way of dispensers is the appearance in a prescription of some unofficial or little-known preparation; it is on such occasions that the Library of the Society has the opportunity of proving its utility, as it is hardly possible for every pharmacist to obtain all the books of formulæ which are published, while it is important that the Library of all the Subscribers to the Society should possess them. Of course every pharmacist ought to possess such books as Squire's 'Companion,' and Martindale's 'Extra Pharmacopœia,' which give a large amount of information not provided in the British Pharmacopœia, but these are not all-sufficient, and formularies, old and new, are frequently brought into requisition to solve some difficulty. Among those most used for the purpose mentioned are the Pharmacopœias of various countries, of which a very good collection is in the Library, and other works such as Hager's 'Manuale Pharmaceuticum'; Dieterich's 'Neues Pharmaceutisches Manual'; the 'National Formulary," published by the American Pharmaceutical Association; the 'B.P.C. Unofficial Formulary'; Redwood's 'Supplement to the Pharmacopœia'; Jourdan's 'Pharmacopée Universelle'; Kilner's 'Compendium of Modern Pharmacy'; Nelson's 'Druggists' Hand-book of Private Formulas'; Beasley's 'Druggists' General Receipt Book,' and his 'Pocket Formulary'; Dorvault's 'L'Officine'; the 'Arzneimittel im Deutschen Arzneibuch nicht enthalten,' published by the Deutscher Apotheker-Verein, etc.

Further, questions are frequently asked concerning drugs of former times, as well as those newly introduced, and a large number of books is necessary to answer all these questions. Many of the works above-mentioned are useful in this subject, and there may also be mentioned the three volume edition of Pereira's 'Materia Medica'; Planchon and Collin's "Les Drogues Simples"; the 'Dictionnaire Universelle de Matière Médicale' of Mérat and de Lens; Guibourt's 'Histoire des Drogues Simples'; Bentley and Trimen's 'Medicinal Plants'; Gerard, Culpeper and Salmon's 'Herbals'; 'Pharmacographia,' by Flückiger and Hanbury; 'Pharmacographia Indica,' by Dymock, Warden and Hooper; the 'National Dispensatory' of Stillé and Maisch; the 'Anatomical Atlases' of Vogl, Moeller, and Tschirch; Berg's 'Atlas'; Berg and Schmidt's 'Offizinelle Gewächse'; and Wood and Bache's 'United States Dispensatory,' edited by H. C. Wood, Remington and Sadtler.

In pharmacy, as well as in materia medica, there is yet an opening for works which will meet the present-day needs of the British pharmacist. At the moment he is very much dependent upon the American supply, which, admirable though it is, does not quite suit him. Proctor's 'Lectures on Practical Pharmacy' is, of course, a classic. Of American works the most important are Remington's 'Practice of Pharmacy,' Parrish's 'Treatise,' and the still newer books by Coblentz and Caspari.

Works on botany are very numerous, and the resources of the pharmacist would be heavily taxed if he desired to form a reasonably complete botanical library. But not many, perhaps, will attempt to do this; rather will they expect the Society's Library to supply their wants. A few of the more important works may be mentioned. For many purposes Lindley and Moore's 'Treasury of Botany' is valuable; a new and enlarged edition would be much appreciated. There is also a want of a good glossarial dictionary to embrace all the new terms which have come into use in late years. Cooke and Henslow have proved useful in their day, but they do not meet the requirements of the present time; Gray and Green in their works have good glossarial indexes, but these are not exhaustive enough.

In systematic botany Bentham and Hooker's 'Genera Plantarum' and De Candolle's 'Prodomus' are very important. The latter, with its supplements and indexes, fills twenty-nine volumes. Floras of various countries are appearing one after another, and to them it is often necessary to refer to find information as to certain plants which have come into use in medicine or economics. The more important of these floras are Hooker's 'Flora of British India,' Bentham and Mueller's 'Flora Australiensis,' Harvey and Sonder's 'Flora Capensis,' Oliver's 'Flora of Tropical Africa,' Trimen's 'Handbook of the Flora of Ceylon,' unfortunately unfinished, in consequence of the recent death of the author. There are also works on Japanese and other Eastern botany, as well as on the American, West Indian, and Oceanic floras. Some of the works are well illustrated, and, consequently, high-priced.

In addition to the foregoing, many other floras have been, and are still being issued, both in this and other countries. In Great Britain, Bentham's 'British Flora' is perhaps the principal of the smaller books, and, with its companion volume, Fitch's 'Illustrations,' is very useful. Hayward's 'Botanist's Pocket Book,' being smaller, is very convenient for botanical excursions. Many counties have also their own floras, *e.g.*, Middlesex, Surrey, Hertfordshire, Oxfordshire, Warwickshire, Hampshire, Cambridgeshire, Leicestershire, West Yorkshire, Herefordshire, Anglesey and Carnarvonshire, as well as the Lake District, so that botanists who are interested in the plants of their respective counties or localities may learn what there is to be found therein. Floras of Berkshire, Perthshire, and Dumfriesshire are also about to be published. In the departments of structural and physiological botany there has been considerable activity of late years, and Sachs, Prantl, Vines, Green, Goodale, and others have made valuable contributions to the subjects.

The literature of microscopy and bacteriology is becoming extensive, and it is somewhat difficult to say which of the books a pharmacist ought to possess, as most of those published are good. In microscopy there is Carpenter's work, edited by Dallinger; Beale, Behrens, Cole, Cross, Davis, Pringle, Lee, and others have also written. In bacteriology, we have books by Crookshank, De Bary, Klein, Woodhead, Griffiths, and several others.

Works on chemistry are so numerous, and so quickly get out of date, that the difficulty of selection is still greater. Bloxam's 'Chemistry, Inorganic and Organic' is a fairly comprehensive work, dealing not only with the subject from a theoretical point of view, but also treating of the applications of chemistry to manufactures. Of course it does not tell everything that pharmacists may want to

know in this science, and references to Watts's 'Dictionary of Chemistry,' Thorpe's 'Dictionary of Applied Chemistry,' Allen's 'Commercial Organic Analysis'; and Gmelin's 'Handbook of Chemistry,' in English, besides many important works in French and German, are continually necessary.

A good work on physics is a desirable acquisition on a pharmacist's shelves, and there are many fairly good works on the subject, such as Ganot, Deschanel, Everett, and other smaller books. But, unfortunately, some contain too many mathematical problems for the average pharmacist, and others too much or too little information. A really good non-mathematical book of convenient size, and yet containing all that the working pharmacist requires, is still a desideratum.

There are many other books on all kinds of subjects that a pharmacist might, with advantage, possess, such as photography, physiology, dentistry, etc., but in the limits of a paper like the present it is hardly possible to enumerate them. A catalogue of the Society's Library to the beginning of 1894 is at the service of persons connected with the Society, and they are recommended to make application to the Librarian for it. They are also advised to communicate to him their needs, as a catalogue cannot always be a sufficient guide to its users as to what the Library may contain, for many books give information which can hardly be indicated in the few words of a title page, and the catalogue does not profess to give a digest of the books.

LABORATORY NOTES.*

BY JOHN BARCLAY, B.SC. (LOND.).

1. *A New Product for "Reducing" Essential Oils.*—This is a volatile oil offered for sale on the London market. It has a "fancy" name, is stated to be of vegetable origin, and to be specially manufactured for the purpose of reducing essential oils. It is also said to combine perfectly with both Sicilian and French essential oils. With the view of ascertaining its properties a pint sample of the oil was obtained and submitted to analysis. The following results were arrived at:—

Specific gravity at 15·5° C.	0·869
Optical rotatory power in tube of 200 M.m.	59°
Flashing point (Abel's method)	100° F.
Solubility in three volumes of alcohol of s.g. 0·820	Fairly soluble.
Residue on evaporation	Trace.

Fractional Distillation.—Percentage yielded between:—

155° and 160° F.	3·50
160° and 165° F.	55·00
165° and 170° F.	24·00
170° and 180° F.	9·00
Above 180°	8·50

There was no aldehyde present, and only a trace of the presence of ester could be discovered when the oil was subjected to saponification.

From the results obtained this oil appears to have the characters of a lævo-pinene, such as is obtained from *Pinus sylvestris, Abies excelsa, Pinus maritima*, etc. The oil has a delicate odour not unlike that of some of the commercial varieties of pine oils, and I have found by experiment that considerable proportions of it may be mixed with oils of lemon and bergamot without the presence of the adulterant being detectable to smell or taste. Such detection would also be difficult by any of the ordinary physical tests (specific gravity, rotation, etc.), which are applied to essential oils, and the importance of having standards such as the percentage of citral in lemon oil, and of linalool acetate in bergamot, is emphasised by a consideration of the impunity with which adulteration can otherwise be conducted.

2. *Tincture of Strophanthus.*—The comparatively limited use of this preparation is no doubt largely due to the great variation found to exist in different samples. Some experiments were, therefore, undertaken with a view of arriving at a standard for the percentage of strophanthin. Various methods of removing pure strophanthin from an aqueous solution of the tincture extractive were tried, such as agitation with amylic alcohol, evaporation to dryness, and treatment of the residue with absolute alcohol, etc., but no very satisfactory results were obtained.

Finally it was decided to make an estimation of the strophanthidin produced by the hydrolytic decomposition of the impure strophanthin, the fact of the solubility of strophanthidin in chloroform being made use of. It was found by experiments that pure strophanthin when hydrolysed gave 36·5 per cent. of strophanthidin soluble in chloroform (Fraser, 'Year Book Pharmacy,' 1887, gives this as 36·2 per cent.), and the strophanthidin percentages found were therefore divided by 0·365, and the figures obtained taken as representing the percentage of strophanthin present. It should be noted that the strophanthidin obtained by this method had a somewhat green tint, but the mean percentages yielded by various samples of tincture correspond fairly well with the strophanthin content of the seeds given by Fraser, viz., 8-10 per cent. Further experiments are being undertaken with the view of, if possible, obtaining the strophanthidin in a still purer condition.

The following is the method adopted in assaying the tincture, and the table given shows the results of experiments made upon six samples of tincture prepared from six parcels of seeds obtained from various sources.

Assay of Tincture.—Fifty C.c. being taken, 50 C.c. of water was added, and the spirit removed by distillation. The filtered aqueous liquid after being shaken with chloroform was digested one hour on the water bath with dilute sulphuric acid (this resulted in the production of a flocculent deposit of strophanthidin). After cooling, the turbid liquid was agitated with three successive small quantities of chloroform; the latter, after being separated, was removed by distillation, and the residual strophanthidin dried below 150° F. and weighed.

The writer of the paper expressed his indebtedness to his assistant, Mr. E. W. Mann, for help received in performing the necessary experiments.

Table showing results of experiments made upon six samples of Tincture of Strophanthus.

No. of Sample.	A Specific gravity of tincture at 15½° C.	B Percentage of extractive in tincture.	C Alcoholic extractive yielded by seeds (calculated from B).	D Percentage (on tincture) of water-soluble extractive contained in tincture extractive.	E Strophanthin (not quite pure) obtained by treating aqueous extractive (see D) with absolute alcohol.	F Strophanthin per cent. (see method of assay)	G Percentage of strophanthin calculated from strophanthidin (1·0 parts strophanthidin = 2·65 parts of strophanthidin).
1.....	·842	·674	3·4	·622	·417	·1408	·410
2.....	·8425	·73	1·6	6·1	·412	·1538	·421
*3.....	·842	·59	11·8	·5136	·470	·1134	3·0
4.....	·8415	·52	10·4	·489	·472	·1503	·413
5.....	·842	·546	11·0	·512	·360	·109	·298
6.....	·843	·557	11·6	·519	·385	·1296	·355
Mean ..	·842	·60	12·13	·552	·42	·1344	·368

* Brown seeds.

* Read before the Midland Pharmaceutical Association on Tuesday, November 17.

PLANTS AS IRRITABLE ORGANISMS.*

BY PROFESSOR J. BRETLAND FARMER, M.A.

Plants, just as much as animals, are irritable beings, and like animals they may show irritability to varying degrees. Thus some plants may be described as mildly irritable, others as rapidly irritable, and a few as even restlessly irritable. Every plant has to look after its feeding. Green plants furthermore have to seek for a very important part of their food in the air, and this they take up under the influence of light; so that it is not surprising to find the influence of environment making itself felt on every plant, and causing the plant in one way or another to react to its surroundings. It is the particular response to stimuli which we may call irritability. A plant is irritable because it is able to respond to a stimulus.

Take the case of Vaucheria, a lowly organised plant frequently found forming large dark green patches upon flower pots. When the plant is put into water it begins to change its character altogether, and in the tips of its filaments aggregations of protoplasm are seen to form. These become more and more dense, the filament then bursts and discharges a green protoplasmic mass, which swims by means of cilia, and finally settles down. The motile plantlet does not do this indiscriminately or in a hurry, but shows a great method in settling down. Before coming to rest each little protoplasmic body has thought for itself, and has decided to settle on the side of the basin a little way below the surface of the water. In this position it secures the maximum amount of light which is to enable it to make the substance it requires for its growth. We may say, then, of this spore that it has had to hunt for its food and has finally settled down on a suitable spot.

Higher plants no less than lower are irritable. The shoots of a tree, responding to the influence of light, place the leaves in the most advantageous position for the work they have to perform, and the roots, in obedience to the stimulus exerted by gravitation, grow downwards into the earth. Tendrils are modified leaves or branches which have become irritable to contact.

A little plant, the Ivy-leaved Toad-flax, found covering limestone walls, with tufts of bright green foliage and purple flowers, affords an interesting instance of irritability. When in blossom, the long flower-stalks of the plant turn outwards and carry the flowers from underneath the leaves, in order that they may secure the visits of insects, which are necessary for their fertilisation. The stalk of the seed-vessel is, fortunately for the welfare of the plant, an irritable structure. When flowering is over it no longer seeks the place which is most strongly lit, but carries the ripening fruit behind the leaves into a little cranny of the wall. Here the seed-vessel bursts and discharges its contents, not among coarser weeds, where its growth would be inevitably checked, but upon the soil which has collected in the cranny. Young seedlings soon make their appearance, and, as a result of this flourishing start in life, the Ivy-leaved Toad-flax is usually found abundantly in districts where it is found at all. Here we have a flower-stalk responding to the stimulus of light, and a reversal of the influence at different periods of development enabling the plant to accommodate itself to its environment.

All plants only succeed so long as their irritability leads them to adapt themselves to their surroundings. The more lowly organised, by reason of their simpler structure, show greater versatility in this respect than their more complex relatives. It is easy to understand how a little mass of protoplasm can more readily adapt itself to varying conditions of life than a higher plant with its extensive differentiation of tissue.

Bacteria are especially sensitive from this point of view. They can distinguish with very great nicety between the relative suitability of two nutrient solutions. Many of them are capable of perfectly astounding discrimination in this respect. In the same way the white blood corpuscles are attracted by certain foreign—often pathogenic—substances to the spot of the intrusion of bacteria into the blood. Here it is the business of the white corpuscles, if possible, to destroy the bacteria. This attraction shown by many organisms towards chemical substances is known as chemiotaxis.

The spores of ferns and mosses afford a remarkable illustration. The male cells are discharged by the plant, and may be seen swimming in all directions in water, when suddenly they will make a dash in the direction of the female organ. This sudden rush is a chemiotactic phenomenon. In the case of ferns malic acid, and in the case of mosses a sugar is the substance secreted by the female organ causing the surprising activity of the little swimming antherozoids. Wonderfully dilute solutions are capable of causing the stimulus. Supposing the strength of the solution be gradually increased, a limit is shortly reached, beyond which the solution acts as a repellent instead of an attractive stimulus, causing the plants to swim away as far as they can. If, however, the plants be compelled to live in a strong solution, they will in time get acclimatised and will swim vigorously towards a solution of the attracting salt, although it may very much exceed the normal maximum of attracting strength.

The following is an example of chemiotaxis which a plant has discovered to secure its own ends. Isaria is a fungus which infests silkworms and other caterpillars. Melanospora is another fungus parasitic upon Isaria. It is an extremely intelligent parasite, and unless it happens to meet with a filament of Isaria it entirely misses its vocation. Now Melanospora apparently secretes some substance which exercises considerable attraction for Isaria filaments, for they seek out the apparently harmless spores of Melanospora and grow freely over them. When the spore is surrounded by Isaria filaments, it puts out its germ-tube and proceeds to feed upon its host.

Not so obviously intelligent, although it is so in reality, is the life of the green plants. The fact that the branches of a tree grow upwards into the air and light, while the roots grow downwards into the soil shows that the different parts are endowed with special irritability. Green plants also possess the power of adapting themselves to circumstances. A potato, when grown in a cellar, in the attempt to get its leaves into the light puts out very much elongated shoots bearing small leaves, for in the darkness leaves are unable to perform the important function of taking in food from the air. This behaviour of the potato plant is, then, a direct attempt to overcome disadvantageous conditions by putting all its strength into the work of elongating its stem, if haply it may bring its leaves to the light.

Roots show remarkable intelligence in the way in which they move through the ground. It is necessary for the proper performance of its duties that the root be supplied with oxygen. It has no difficulty in obtaining this oxygen from a healthy soil. In the tropical mangrove swamps the soil consists of a mass of decayed vegetation, where very little oxygen is found among the putrefying substance. The mangrove accordingly adapts itself to circumstances. Its roots begin by growing horizontally in the normal way, but if not properly aërated they proceed to take a turn upwards, grow along in the air for a short distance above the ground, and then go down again. A root may repeat this process at intervals. In the aërial parts is found a permeable tissue which allows of free circulation of air between the cells.

The entire behaviour of roots is influenced by gravitation. If the influence of gravity in a particular direction be done away with as by causing a growing seedling to rotate and so receive the

* Opening address to the School of Pharmacy Students' Association.

gravitation stimulus in all directions by turns, the root will grow quite horizontally, thus showing that the downward direction is due to gravity. The tap-root is stimulated by gravitation in such a way that it grows vertically downwards, while lateral roots under the action of the same stimulus grow in a very much more oblique direction. If now the plant be tilted, the growing end of the tap-root turns vertically downwards, while the lateral roots curve in such a manner as to restore what may be called their normal direction. If by any mischance the tap-root gets broken off or destroyed, the want is supplied by neighbouring lateral roots. These roots now behave towards gravitation as did the tap-root, and change their sloping direction for the vertical. Another instance of gravity causing a member to grow in a definite direction, making an angle with the vertical, is afforded by the daffodil. The daffodil always hangs its head. This depends, not on the weight of the flower, but on the stimulus of gravity, for no matter how the stalk may be placed, the flower always makes the same angle with reference to the direction of gravitation.

When a part of a plant responds to an external stimulus the whole plant need not necessarily know in which direction the stimulus tends. In the case of roots a certain part is increasing in length, and this is the portion in which curvature takes place under the action of the stimulus of gravitation. But this is not the part which knows which way gravity is pulling Near the tip of the root, just behind the root-cap, is a very small patch of tissue which perceives the stimulus. Cut off the tip of the root, and with it this little patch of irritable tissue, and inver the plant, and the root, which is thus placed uppermost, grows vertically into the air. A very interesting experiment in illustration of this fact, and one easily tried, is as follows:—Take a thin glass tube shaped like a boot, the toe being rather short, not more than 2 M.m. long. Allow the root of a seedling to grow into this, fixing the plant at the open end of the tube. The root grows vertically down the tube, and when it reaches the toe it turns horizontally along it. Now release the plant from the stay which has fastened it to the tube, and let it be free to grow as it likes. The tissue at the tip of the root sends a message up the plant that there is something preventing it from responding to the stimulus of gravity and growing vertically downward, and this is necessitating its horizontal growth. In response to this message the elongating portion curves at right angles in the hope of thus getting the tip of the root round the opposing structure. But it is unconscious that a trick is being played upon it, and that the root is fixed in the glass tube, unable to move forwards, and that the curvature, instead of pushing the root horizontally forwards, acts upon the shoot, pushing this horizontally in the opposite direction.

The berries of some foreign species of mistletoe show a remarkable behaviour in their endeavours to penetrate the trunk of a tree The sticky berry fastens itself to a branch, sends out a root, which curving over, meets the branch again and forms a saddle-like mass of tissue. It attempts at this point to pierce the bark. If unable to do so the berry becomes detached from the branch, the root curves over in the opposite direction, and again deposits the berry a little farther on. The saddle now becomes detached, and, by another bending of the root, is placed once more on the branch beyond the berry. If roots can penetrate in the new station all goes well, but if not the plant performs another somersault. One berry that was made the object of continued observation performed five jumps in two nights and three days. A number of unfortunate berries were once seen hopelessly travelling along the telegraph wires in Ceylon vainly endeavouring to find a profitable resting place. The Sensitive Plant and the Venus Fly-trap furnish two examples among many others of restlessly irritable plants which react violently to the stimulus of contact. It is a curious and but little known fact that the Venus Fly-trap only responds to the stimulus when one of the hairs on the centre of the "trap" is touched twice. No effect is observed after the first touch.

The wonderful purposefulness of these habits and mechanisms for ever dispels the idea that botany treats of inert, objectless plants. It is instead a science of life and living things, each one of which is endowed with marvellous and different powers of making the best of life in the sphere in which it finds itself.

CHINESE OPIUM TRADE.*

The total net importation of foreign opium was in round numbers 6,750,000 lbs. in 1895, and under 8,500,000 lbs. in 1894. The respective values were 29,000,000 Haikwan taels in 1895, and 33,000,000 Haikwan taels in 1894.

The diminution has taken place in all varieties, as is shown by the annexed table:—

Year.	Malwa.	Patna.	Benares.	Persian.	Total.
	lbs.	lbs.	lbs.	lbs.	lbs.
1894.....	3,958,670	2,635,600	1,227,867	594,534	8,416,671
1895.....	3,554,800	1,954,800	1,028,667	302,534	6,840,801

The fall in the amount imported has been very great. The quantity of foreign opium annually brought into China has never before 1895, fallen below, 8,000,000 lbs.

Her Majesty's Consul at Shanghai, speaking of opium, says, "It has been becoming apparent now for several years that the burning opium question will soon solve itself, and the trade which so many wish to see ended by violent means is likely to disappear by a sort of painless extinction." But he goes on to say that over 10,000 piculs (1,300,000 lbs.) are imported from Western China to Shanghai, and that the quantity thus imported shows an increase of almost exactly the same amount as that by which the Indian drug has diminished. Some native opium is now being exported to foreign countries.

The poppy is now cultivated in many parts of the Empire. It grows in Manchuria, and the opium made there is exported from Newchwang by junk, chiefly it is said to Shansi. Much adulteration is said to go on in the case of this northern variety.

The great seat of the cultivation of the opium poppy, however, is the west and south-west of China—Ssŭch'uan, Kueichou, and Yünnan. At Chungking only 1 picul (133⅓ lbs.) of foreign opium appears to have been imported during the period 1886-95. An interesting account of the preparation and taxation of Ssŭch'uan opium, together with some remarks on the Yünnan and Kueichou varieties will be found in the Decennial Reports of the Imperial Maritime Customs under the article, Chungking.

The amount of opium exported through the Imperial Maritime Customs at Chungking was more than double that reported in 1894, which again was double the export of 1893. The export of Yünnan opium, which only amounted to 11,000 lbs. in 1893, had risen to 98,000 lbs. in 1894, and 131,000 lbs. in 1895. An equal amount passes probably through the native customs. The crop of 1895 was a good one, and the demand was so great that a difficulty was experienced in procuring transport. Very great profits were made. The area on which the poppy is cultivated is likely to be extended; crops, such as wheat and beans, being displaced. On the other hand the cultivation of paddy is not disturbed by the poppy to any

* From report (1803) for the year 1895, on the foreign trade of China.

great extent. Profitable as poppy cultivation is the crop is a very precarious one. Mr. Hughes, in the decennial report for Amoy, remarks that when the poppy is in bloom, one wind-storm may destroy all chance of a lucrative return, and for the same reason, according to Mr. Novion, the Wênchow farmers find that wheat is after all a better investment.

As regards the other regions in which opium is produced, there has been a great increase of poppy cultivation in the neighbourhood of Chefoo since 1882, though a small quantity only is exported from that port. In 1895 the amount of foreign opium imported nevertheless showed an increase over the quantity annually imported for some years previously, viz., 454 piculs (or about 60,000 lbs.). The amount in the preceding year was 413 piculs. In 1882 it amounted, however, to 1124·26 piculs (or about 150,000 lbs.). The whole province of Shantung is said to produce annually about 28,400 piculs (over 3,750,000 lbs. of opium). The retail price of native opium is 3 dol. a catty (about 7*s.* for 1⅓ lb.), while foreign opium costs about double the price. The quantity of Ssŭch'uan opium imported was 77 cwts. in 1894, and 370 cwts. in 1895.

The poppy is cultivated on the lower Yangtze in the provinces of Hupei and Honan. Practically no foreign opium is imported at Ichang, but the re-export of the native drug has increased nearly thirty-fold since 1891. Of the varieties of the native drug which pass through Ichang the Yünnan opium appears to be the most costly, its market price being 352 taels per picul. Ssŭch'uan opium only costs 240 taels per picul, while the same amount of Hupei opium costs 252 taels. The local opium at Ichang is of inferior quality. At Hankow 688 cwts. of Indian opium was imported in 1895 and 858 cwts. in the preceding year. The amount imported has steadily declined since 1886. The quantity of western opium passing through the custom-house at the port in question amounted to 12,273 cwts. in 1895.

Opium is extensively produced in the southern maritime provinces. At Ningpo there has been a considerable falling off in the amount of Malwa opium imported. China grown opium is only imported to a small extent, and Her Majesty's Consul (Mr. Playfair) considers that there is little prospect of the Indian variety being supplanted. The decrease in the import of Indian opium has been much greater at Wênchow, where only 8506 lbs. were imported in 1895. The import in 1894 was 11,333 lbs., but in 1888 it amounted to 31,066. The habit of opium smoking, however, is becoming yearly more general in the Wênchow district, and the area on which the poppy is grown has almost doubled during the last five years. An ounce of the native drug costs exactly half the price of an ounce of Indian opium. A working-class smoker spends about 1*d.* a day on his pipe, while a well-to-do smoker spends about 2*s.* As elsewhere the poppy does not interfere much with the rice-crop. As has been already remarked the poppy is a very risky crop, but as the profit from a "mou"* of wheat is 2 dol., say 2*s.* 4*d.*, whereas that from a mou of poppies is 12 dol., or 26*s.*, it is natural that the Chinese farmer, who, like the rest of his countrymen, is inclined to gamble, should in most cases prefer the excitements which a gay-coloured field of poppies must afford. Over 3,000,000 lbs. were produced in the neighbourhood of Wênchow in 1895, though this was considered to be only a fair output.

At Foochow a local variety of opiums is produced at Funing which, with that brought down from Ssŭch'uan, is driving out the Indian article. The amount of foreign opium imported fell below 4000 piculs, over 500,000 lbs., for the first time during the decade 1886-95.

(*To be continued.*)

* A "mou" is rather less than one-sixth of an acre.

LINNEAN SOCIETY OF LONDON.

At a meeting held on November 5, Dr. Günther, M.A., F.R.S., President, in the chair. Messrs. A. B. Freeman Mitford, C.B., and William Tyson were elected, and Messrs. Vernon H. Blackman and Percy Groom were admitted fellows of the Society.

Dr. Morris, C.M.G., Royal Gardens, Kew, exhibited specimens and slides illustrating the occurrence of raphides in the bulbs of the common hyacinth of gardens (*Hyacinthus orientalis* and varieties). Forms of eczema were said to have been produced in persons handling and cleaning these bulbs. Although the fact was familiar to gardeners, the cause did not appear to have been clearly traced. Experiments and observations at the Jodrell Laboratory at Kew had shown that both dry and moist scales were capable of producing considerable irritation in certain cases when applied directly to the skin. There was little doubt that the raphides were the prime agents (see also p. 458).

Dr. D. H. Scott described some experiments which he had tried, tending to confirm the conclusion that the irritation of the skin produced by contact with the bulb-scales of hyacinths is due immediately to puncture by the numerous raphides.

On behalf of Dr. H. B. Hewetson, of Leeds, Mr. Harting exhibited photographs of a specimen of Macqueen's bustard (*Otis macqueeni*) which had been shot at Easington, in Holderness, on October 17 last, and gave a brief account of the species, which had now been met with in England for the third time; the first instance of its occurrence having been noticed in Lincolnshire, in October, 1847, and the second in Yorkshire in October, 1892.

Mr. Hugh Warrand exhibited a remarkable bird, which was believed at first to be a hybrid between the red grouse and ptarmigan, but which in the opinion of Mr. Ogilvie Grant, Mr. Millais, and Mr. Harting, could only be regarded as an abnormally pale-coloured grouse. Only one possible instance had been recorded of such a hybrid as was suggested, viz., in the case of a bird which was exhibited some years ago by Professor Newton to the Zoological Society ('P.Z.S.' 1878, p. 793) and has since been figured by Mr. Millais in his work on game birds.

A specimen of the cream-coloured courser (*Cursorius isabellinus*), an extremely rare visitor to this country from North Africa (probably *viâ* Spain), which had been shot on Salisbury Plain, at Earlstoke, on October 10 last, was exhibited by Mr. Harting, who gave particulars of the occurrence, and stated that another example of this bird had since been obtained in Bouley Bay, Jersey.

A paper by Mr. A. W. Waters, F.L.S., on "Mediterranean Bryozoa" was then read. Dealing in the first place with some Cellulariidæ and other Bryozoa from Rapallo, the paper was to some extent a revision of work already published on Mediterranean Bryozoa. Stress was laid upon the importance of noting the position from which the radicle-tube grows, and this was found to be a character of specific value. The way in which articulation takes place was shown to be a character of importance; there being two distinct kinds of articulation in the Cellulariidæ which might be used in establishing generic divisions. The complicated stalk of *Childonia cordierii*, And., was described, and comparisons made with the stalks of *Stirparia*. Ovicells on the top of the "erect tube" of *Aetea* were recorded for the first time, and as a "tribus" Inovicellata had been created for the aeteidæ, it was shown how precarious it is to base classification upon the absence of a character.

Dr. S. Schönland communicated a paper on some new species of *Crassula* from South Africa, which he had obtained from localities which had been very rarely visited by botanical collectors, and which were believed to be undescribed. Mr. J. G. Baker, who criticised the paper, spoke in favourable terms of the care which had been taken by the author in its preparation, and thought there was sufficient justification for describing the species mentioned as new.

A revisionary monograph of the New Zealand Holothurians, by Professor A. Dendy, D.Sc., F.L.S., of Christchurch, N.Z., was read. New species of the genera *Cucumaria*, *Colochirus*, and *Psolus* were described. *Echinocyamus alba*, Hutt., and *Thyone brevidentis*, Hutt., were shown to be referable to *Colochirus*. *Thyone caudata*, Hutt., and *Thyonidium rugosum*, Théel, were shown to be identical with *Thyone* (*Pentadactyla*) *longidentis*, Hutt.; and *Stichopus sordidus*, Théel, was shown to be *Holothuria mollis*, Hutt., which is in reality a *Stichopus*.

Seventeen specimens were in all admitted, four being doubtful, and four provided with overlapping plates. The general anatomy was described wherever desirable. The cœlomic fluid of *Candina coriacea* was shown to contain two distinct types of colourless corpuscles, and, in addition, numerous brownish-red corpuscles, akin

to those observed by Howell in a *Thyonella*. A "dichotomously foliaceous" order of spicule, apparently of the type recorded by Bell for *Cucumaria inconspicua*, was found to exist in various degrees of modification in *Stichopus mollis*, and details were given of the growth processes of the "wheel" in *Chirodota dunediensis*, having interesting bearings upon the observations of Ludwig, Kishinouye, and others.

The Rev. J. Whitmee made some remarks on the Trepang fishery in Samoa, where several edible species of Holothurians are gathered and prepared for the market, and called attention to the well-known fact that a small fish of the genus *Fierasfer* used the body of the Holothurian as a habitation.

CHEMICAL SOCIETY.

An ordinary meeting was held on Thursday, November 19, Mr. A. G. Vernon Harcourt, F.R.S., President, in the chair.

The first paper selected for reading was entitled "Sulpho-Camphoric Acid and other Derivatives of Camphor-Sulphonic Acid," by A. Lapworth, D.Sc., and F. Stanley Kipping, Ph.D., D.Sc. This investigation was taken up in the hope of obtaining some new reaction which would lead the authors to clear up the perennial uncertainty surrounding the question of the formula of camphor. The experiments carried out by the authors were based upon the oxidation product obtained by the action of potassium permangate on sulpho-camphoric acid by a new method whereby they obtained an acid having the formula $C_{10}H_{16}SO_7$.

Dr. Kipping disagreed with Marsh and Cousens on the question of the sulphonation of the halogen derivative of camphor, saying that their formula was very apt to mislead others.

Mr. W. J. Pope then followed with an interesting paper entitled "Camphoric Acid and Camphoric Anhydride." He had tried to obtain measurable crystals of camphoric acid from acetone. The crystals which he had succeeded in getting contained acetone of crystallisation, and showed a close relationship in crystalline structure and cleavage to camphoric anhydride, all the angles being identical in both cases. Mr. Pope thinks that this close crystalline resemblance cannot be merely casual. The camphoric acid crystals with the half molecule of acetone lose acetone on exposure.

In the absence of Dr. P. H. Ray, Mr. Dunstan was called upon to read the three papers on the mercury nitrites which had been submitted to the Society. This he did at so great a speed that it was almost impossible to follow him, and as he interspersed the matter he picked out here and there from the voluminous papers with various critical remarks, the effect was unsatisfactory to author and audience alike. The paper entitled "Mercury Hyponitrites" was really a preliminary notice describing an attempt to produce the salts by various methods. One method described was to add a solution of sodium nitrite drop by drop to a solution of mercurous or mercuric salt. The result of this procedure was a yellow flocculent precipitate. The order of mixing, it appears, makes some difference. The same precipitate had been obtained by another method. Determinations of the nitrogen in the salt were made by Dumas' method. Some figures were placed on the board giving the percentages of mercury and nitrogen. Thus :—

Hg.....		83·16	Calculated.
N.....		2 91	
Hg.....	84·83.....	83·96	Found.
N.....		2 97	

Mr. Dunstan said that the results of the analyses did not tally very satisfactorily. The author, however, is endeavouring to obtain pure hyponitrite of mercury.

The last paper was "On the Identity of Dextrose from Different Sources, with Special Reference to the Copper Oxide Reducing Power," by C. O'Sullivan, F.R.S., and A. L. Stern, D.Sc. The discordant figures obtained by various workers induced the authors to undertake this investigation. The dextrose was obtained from such sources as cane sugar, cane sucrose, beet sucrose, starch, and lactose. The copper oxide reducing power, rotatory power and specific gravity of each specimen of dextrose isolated were carefully determined, and it was invariably found that the body had the same properties. The specimens were purified by crystallisation from methylic alcohol, and the authors had taken particular care to work always under the same conditions. The conclusion arrived at is that dextrose, from whatever source it may have been obtained, is one and the same substance.

There was some little discussion on this paper, which was also read by Mr. Dunstan, and the meeting then closed.

PHOTOGRAPHIC NOTES.

PHOTOGRAPHING THOUGHT.—Since the first inception of the idea of photographing thought by Mr. Ingles Rogers, and the marvellous results he obtained, Dr. Baraduc of Paris claimed to have obtained still more wonderful results in that he obtained thought images at some considerable distance, many have been the rumours as to similar investigations. It has been left, however, to Dr. J. Allinson Hodges, of Richmond, U.S.A., to suggest a still more ghastly application of photography. It is probably well known that Alfred Binet, a French physicist, contends with much plausibility of facts and reasoning therefrom, that sensations from the outer world such as colours and shapes assume the guise of permanent pictures in the sensory centres of the brain just as they assume temporary pictures in the "sehpurpur" of the retina. Dr. Hodges proposes to photograph these brain pictures by trephining the skull and taking instantaneous photo-micrographs by artificial light. Dr. Hodges is casting about for a negro or criminal who will allow himself to be operated upon. Many years ago Mr. Geo. Rockwood, also of U.S.A., stated that in making sections of the brain of a philologist distinct Aramaic characters were to be seen. One cannot help feeling that imagination goes a very long way with some people.

NATURE'S X-RAYS.—It has already been pointed out in these pages that Mr. David Packer of the Astrophysical Laboratory of Birmingham has been engaged for some time in obtaining pictures of the solar corona on photographic plates covered with light-tight lead foil, and M. Le Bon has obtained impressions by what he calls his "dark light." Now, however, both these astounding discoveries have been outdone, for Herr Dohrman, an electrician of Bremen, has obtained shadowgraphs by some energy from the moon. Some plates were placed in light-tight boxes and further wrapped in opaque cloth, and were then exposed to the full moon in March, and on development distinct impressions were obtained. The first boxes were made of wood and then the next of iron, and sometimes images, but at other times no results appeared. A careful study of the results obtained led the investigator to come to the conclusion that the penetrating rays were present for a minute or two and then ceased. Dohrman enunciates the theory that as the moon possesses no atmosphere like the earth, it is therefore capable of producing cathode rays, and when these rays encounter an atmosphere they produce light and warmth and enable us to see the moon, but certain disturbances of the atmosphere permit some of the rays to reach the earth, and that is why they are only to be found intermittently.

A NEW DISCOVERY?—Mr. J. H. Player has been immortalised by the daily press because he has discovered something which was known about 1842. He has discovered that if a piece of writing or printed matter be placed in contact with a sensitive surface under green glass it is possible to obtain a negative on exposure to light. Somebody will discover next that some of the silver salts are sensitive to light.

A NEW FILM.—The Gem Dry Plate Company, of Cricklewood, is shortly to place upon the market a new flexible film, which, according to the statements of the makers, is as transparent as glass, is rigid, in cut sizes, and can also be made flexible enough for roll holders. It requires no backing of paper, is impervious to water, lies flat during all the operations, has no prejudicial action on the emulsion, and last but not least, will be as cheap as glass plates. Some samples shown seem very satisfactory.

PACKING PLATES.—According to Colson the best paper in which to pack sensitive plates is obtained by soaking it in a three per cent. solution of potassium bichromate to which some gum arabic has been added, exposing thoroughly to light and then washing till all trace of bichromate is washed out. Such a paper is impermeable to damp or gases of all kinds.

KITE PHOTOGRAPHY.—Lately at Rotch's Observatory, near Boston, U.S.A., some wonderful experiments in kite flying have been carried out. The kites were of the tailless Eddy or Hargrave box type, piano wire taking the place of the ordinary string. An altitude of 8750 feet was attained with a pull of ninety-five pounds. Several meteorological instruments were carried by the kites, but it is now proposed to send up cameras. Kite photography is not new, it having been before now experimentally tried, but it is proposed to carry out a series of careful tests on the same lines as those recently made at Boston, in connection with the German army manœuvres.

BANDED SPECTRA AND DÖPPLER'S PRINCIPLE.—It has always been considered hitherto that complex molecules alone gave banded spectra, whilst atoms give line spectra. Wiedemann now points out that it has been proved by Eder and Valenta's researches that mercury vapour gives bands; cadmium and zinc also give bands in the violet in a vacuum tube with low power. Potassium and sodium also give continuous spectra in the red and green, and like sodium they also give fluorescent spectra, which in the case of sodium consist of a series of bands in the blue and green. Eder and Valenta have also found that argon and helium gave a shifting of the lines towards the red on increase of pressure, which will probably entail some enquiry as to the correctness of the theory of the recession and procession of the heavenly bodies as determined by the displacement of the F line in their spectra.

A SUBSTITUTE FOR CARBON BISULPHIDE.—Notwithstanding its disagreeable smell carbon bisulphide has held its own for fluid prisms, and many have been the substitutes proposed, but all have had some disadvantages, either they were very costly, had poor dispersive power, or as strong a perfume as CS_2, and like it absorbed the ultra violet. Wolher now states that he has found that o-monobromonaphthalin possesses very great dispersive action, is without smell and does not absorb the ultra violet, as he has been able to observe beyond N with a fluorescine solution.

ARGENTAURUM.—We have already recorded [the important discovery of Mr. Emmens, of the U.S.A., by means of which it is said he can convert silver into gold. Some people, particularly the Silverites and Bryanites, had hoped that this was the solution of the currency question across the water, but now a little more information is to hand. It appears that the new substance is not silver, but has all the physical properties of gold, though it is not gold, and is said to be a new element (?). Professor Ira Remsen, of the Johns Hopkins University, has been making researches for a long time in the same direction, and is now having special apparatus built. Edison, of course, is said to have done the trick, and his product is gold; whilst Tesla is stated to have attained the same end by producing the X-rays from a silver electrode and allowing them to fall upon a silver plate. A big syndicate has been formed to wheedle the true metal from would-be investors' pockets and to manufacture Argentaurum, which is the name given to Emmens' discovered metal.

SELECTED PRACTICAL FORMULÆ.*

The following specially selected formulæ are published in the hope that they may convey some seasonable hints to readers of the Journal:—

Chilblain Liniment.

Oil of Cajeput	2 fluid ounces.
Camphor	1 drachm.
Soft Soap	2 drachms.
Rose Water	3 fluid drachms.

Rub the soap down smooth with the water, dissolve the camphor in the cajeput oil, then gradually add to the soap mixture, and continue rubbing until a creamy emulsion results.

Lanolin Toilet Cream.

Lanolin	4 ounces.
Powdered White Soap	1 ounce.
Rose Water	16 fluid ounces.
Ess. Bouquet	1 fluid ounce.

Mix the powdered soap with the lanolin, gradually add the rose water with constant stirring, and lastly add the perfume.

Gout Pills.

Acetic Extract of Colchicum	Of each 1 grain.
Extract of Barbados Aloes	
Extract of Hyoscyamus	
Blue Pill	

Mix.

Glycerin Cream.

Zinc Oxide	1 ounce.
Glycerin	2 ounces.
Rose Water	1 ounce.
Carmine	20 grains.

Rub the zinc oxide and carmine perfectly smooth with the glycerin, then add the rosewater.

Camphor Ice.

Spermaceti	4 drachms.
White Wax	4 ,,
Oil of Sweet Almonds	1 ounce.
Camphor	4 drachms.
Oil of Eucalyptus	5 minims.
Oil of Bergamot	15 ,,

Melt the wax and spermaceti in the almond oil, then add the camphor in powder, lastly the essential oils, and pour while warm into the pots or boxes.

Cold Cream.

White Wax	2 ounces.
Spermaceti	2 ,,
Oil of Sweet Almonds	14 ,,
Lanolin	6 ,,
Rose Water	9 fluid ounces.
Borax	1 drachm.
Oil of Bergamot	15 minims.
,, ,, Ylang Ylang	15 ,,
,, ,, Neroli	5 ,,
,, ,, Rose Geranium	5 ,,

Dissolve the borax in the rose water, made slightly warm. Melt the spermaceti and wax in the almond oil on the water bath. Put the lanolin in a hot mortar, add the melted waxes and oil, and mix thoroughly. Then gradually stir in the rose water, and continue gentle stirring till almost cold. Then add the perfumes.

Bay Rum.

Oil of Myrcia Acris	1 drachm.
Oil of Sweet Orange	10 minims.
Acetic Ether	10 ,,
Rum	1 ounce.
Burnt Sugar	2 minims.
Rectified Spirit	8 ounces.
Orange Flower Water	8 ounces.

Dissolve the oils and the rum in the rectified spirit, mix with the water, add the colouring, and stir in about a drachm of finely-powdered pumice stone Throw upon a dry filter and filter bright.

* Records of experience with any of these formulæ, if sent by readers, will be gladly received.

PHARMACEUTICAL JOURNAL.

A Weekly Record of Pharmacy and Allied Sciences

ESTABLISHED 1841.

Circulating in the United Kingdom, France, Germany, Austria, Italy, Russia, Switzerland, Canada, the United States, South America, India, Australasia, South Africa, etc.

Editorial Office: 17, BLOOMSBURY SQUARE, W.C.

Publishing and Advertising Office: 5, SERLE STREET, W.C.

LONDON: SATURDAY, NOVEMBER 28, 1896.

THE "MORALITY" OF JOINT-STOCK COMPANIES.

The fifth annual report of the Board of Trade on the liquidation of Joint-Stock Companies serves as a useful corollary to the judgment of the House of Lords recorded last week. It very clearly exposes the utter rottenness of the system under which limited liability companies are floated. During the past year, 3538 new companies were registered in England and Wales, with a nominal capital of £216,309,910, and the total number of companies on the Register in April last was 18,524, a net increase of 1536 over the preceding year. The career of 1058 companies was terminated by liquidation during 1895, and 944 were removed from the Register on other grounds. Roughly speaking, more than half of the companies floated proved failures. Large companies were more lucky than in former years, but a much larger proportion of those with obligations amounting to less than £10,000 suffered disaster. For the most part, these seem to have been formed to carry on existing concerns without any practical change of management or ownership. They would doubtless include many instances of the "One-Man Company," the device by which an individual manages to carry on business on a large scale but with a limit to his liability, and possibly to the detriment of honest traders who endeavour to meet all their obligations. It is remarkable, too, that the record shows an extremely small proportion of the failures to have been due to misfortune or to *bonâ-fide* miscalculation of probable results. The Inspector-General asserts that it is within the mark to say that more than 90 per cent. of the entire number of failures were due to "circumstances connected with their promotion, formation, or management, which were entirely within the control of the promotors or directors," and he adds that in the judgment of reasonable men, those circumstances "could only lead to failure."

One-fourth of the companies that were failures had no real capital, but were simply "devices for preying upon the trading community"; thirty-six per cent. had a real capital, but one which was known to the promoters and directors, on going to allotment, to be insufficient for the purposes of the business; sixteen per cent. were formed by insolvent traders for the purpose of escaping the liabilities of bankruptcy by transferring their liabilities to the public. He adds that, among the rest, the failure of two was mainly due to fraudulent management, while some ten or more were constituted by two or three private individuals with a small capital not necessarily or obviously adequate, the failure arising from the fact that business was "conducted throughout at a loss." The irregularities disclosed in connection with these companies include the secret issue of debentures; the subsequent obtaining of goods on credit which could not be and were not paid for, but went to increase the value of the debentures; also the publication of misleading statements in prospectuses and balance sheets, and the non-qualification of directors. But special attention is directed by the Inspector-General to the increasing practice of creating a purely fictitious capital for the purpose of obtaining credit from the trading community. Large numbers of companies are said to be in the habit of deliberately trading with a capital, ostensibly paid up either in cash or in property, which is not and in many cases never at any time was, represented by any corresponding amount of *bonâ-fide* assets. And it follows that losses are continually being incurred by credit being given on the faith of such misrepresentations. As a remedy for this state of affairs, public registration of an annual statement of a company's assets and liabilities is suggested.

The possible objection that companies should not be required to disclose their position any more than private individuals, is met by the statement that the question really is whether the Legislature—in conferring immunity from personal liability—would be acting unreasonably in requiring as a condition that an honest statement of the company's financial position shall be furnished to the best of the belief of those responsible for the management of the company. The pertinent question is asked—why should any conditions be imposed in the interest of shareholders, if limited liability is to be extended to anyone without any conditions for the protection of creditors. "If the principle of '*caveat emptor*' is to apply to creditors under the Limited Liability Acts, why should not an analogous principle apply to shareholders?" And if no conditions are necessary for the protection of creditors or shareholders as a condition of trading with limited liability, why legislate at all? Any person can now trade with limited liability by simply giving notice, when entering into a contract of sale or purchase, that he will not be liable beyond the amount of his assets. "If, on the other hand, it is deemed expedient to grant the privilege of trading with limited liability, without special contract, only on certain conditions designed to provide against abuse of the privilege, every argument which can be adduced in favour of any one of these conditions appears equally to apply to the proposal that companies should annually register a statement on responsible authority of their assets and liabilities." This puts the whole matter very clearly, and it may be anticipated that—after the crushing indictment of the Joint-Stock Companies Acts furnished in the body of this report—some decided steps will be taken to remedy one of the grossest evils of modern commercial life. But in whatever direction improvement is effected, it is essential that everyone now suffering under the legalised curse of the man with no capital, who limits his liability by constituting himself a company, should take active steps in the direction of influencing legislators, for above everything else in the report the fact stands out that he is practically the worst offender against the ordinary principles of trade morality.

ANNOTATIONS.

THE DEVELOPMENT OF THE JOURNAL as an organ faithfully reflecting the position and requirements of pharmacy, both in its trade and professional aspects, has been referred to in numerous letters received by the Editor during past months, and more especially since a request was made for opinions on this subject, *ante*, p. 428. Two of these communications appear on page 478-9, and the spirit that has animated the writers is gratefully acknowledged. But a similar spirit—one of satisfaction with the results achieved—pervades every letter bearing on the matter in which opinions are directly expressed. We desire to take this opportunity of expressing thanks for the general interest taken in the Journal, and the sympathetic feeling indicated by the letters we have received. It is encouraging to find that this is the case, notwithstanding the great diversity of requirements and tastes obtaining among the readers of the Journal. Of the numerous valuable suggestions offered, some had been partly anticipated and others will be acted upon as opportunity offers, but in many instances the Editor has been given the benefit of good ideas which for the present are incapable of realisation in practice. Progress in journalism should be gradual and continuous, rather than rapid and intermittent, and it is trusted that by the general co-operation of all those who are directly interested in its success, the *Pharmaceutical Journal* may fulfil the former conditions.

THE PRESENT NUMBER OF THE JOURNAL should be sufficient answer to Mr. Laing's implied reprcach of non-recognition of "the fact that pharmacists are of necessity compelled to devote themselves to more than the professional duties of pharmacy." The difficulty is that a large number of readers, probably including Mr. Laing, do not realise that business requirements are not identical for everyone engaged in the practice of pharmacy. It is grossly unfair to expect that nothing shall appear in a journal but what interests some one reader, and the individual who objects to the publication of matter that does not directly appeal to him is selfish in the extreme. A much better spirit is manifested by a correspondent who says, "there are things in it (the Journal) which I don't want; but I do know that some one else (whose right is as good as mine) does want them. There are other things in it that I do want and therefore I am content."

THE MARKET REPORTS that we publish weekly undoubtedly meet a pressing need, and from all parts of the country evidence has lately been forthcoming that many readers have been able, by their aid, to buy goods to great advantage. From a trade point of view nothing could be of more importance, and one Local Secretary goes so far as to say that, judging from his experience (amongst men often far away in the country districts) omission or curtailment of these reports "would cause a howl from, and an oxodus of, members." Other correspondents refer to the advantage they have derived from a business point, through utilising the multitudinous hints gathered from the special articles, technical abstracts, etc., that have been published during the past eighteen months or more. All which goes to prove that the working pharmacist knows what he requires, and appreciates it when he receives it. But he must allow for the possibility of others reaping advantage from what may not appeal to him.

THE GENERAL MEDICAL COUNCIL opened its sixty-first session on Tuesday afternoon, when Sir Richard Quain, the president, occupied the chair and delivered the usual address. This dealt almost exclusively with disciplinary matters and education, the Pharmacopœia being not even referred to. In regard to education, the difficulty was pointed out of determining the method by which the knowledge required for the practice of the profession could be conveyed to the student, or acquired by him; and also the further difficulty of devising a method of examination by which to discover how much information and knowledge the student has acquired, and how far he is capable of making it available. But the subject is not one that can be taken up in a hurry; it will require great deliberation by experienced minds to suggest such changes and improvements as scientific progress demands, and such as may secure that the student about to become a practitioner of medicine is more competent for his important and responsible functions. This, said Sir Richard, is the paramount duty imposed on the Council, which it has well performed, and for the performance of which its constitution is well adapted. At the conclusion of the address, the business of the Session commenced, the most noteworthy point in the proceedings being the adoption of the following resolution, on the motion of Dr. Thomson: "That the course of general education prescribed for students seeking admission to the medical profession is inadequate, and that it be referred to the Education Committee to report to the next meeting of the Council in what manner the standard may be raised, and greater uniformity of tests be secured." At a time when the idea of insisting upon a more extensive course of general education for pharmacists is being seriously considered, this proposal possesses especial interest.

EVENING MEETING IN LONDON.—A meeting of the Pharmaceutical Society will be held at 17, Bloomsbury Square, W.C., on Tuesday, December 8, at 8 p.m., when the following papers will be read:—

"A Note on the Estimation of Quinine." By David Howard, Treasurer of the Institute of Chemistry.

"Notes on the Trees yielding Myrrh, and Gum Arabic." By E. M. Holmes, F.L.S., Curator of the Society's Museums.

The chair will be taken by the President, Mr. Walter Hills, and it is hoped that there will be a large attendance.

THE LATE BARON VON MUELLER was held in the highest estimation in Victoria, where he held the post of Government Botanist, and an appreciative account of his career as a scientist appears in the *Australasian Journal of Pharmacy*, together with a fine portrait of the Baron. He was one of the founders of the Royal Society of Victoria, and an honorary member of the Pharmaceutical Society of Australasia, which he was ever ready to assist, whilst he took great interest in its progress. He had a vast amount of knowledge in pharmacy, observes our contemporary, and nothing gave him greater pleasure than the progress of pharmaceutical education. "His death will cause a vacancy which it will be almost impossible to fill; he will be long missed by those who were brought into contact with him."

DEATH OF SIR BENJAMIN RICHARDSON.—A prominent character in the world of medical science has been removed by the unexpected death of Sir Benjamin Ward Richardson, F.R.S., on Saturday last. His work is well described as having been of a very wide and multifarious character. Hygiene and temperance were advocated by him continually, in season and perhaps out of season, and he undoubtedly did much towards extending the practice of both. In particular he investigated the physiological action of alcohol, and as the result of a long series of investigations in connection with the study of anæsthetics, he arrived at the conclusion that total abstinence from alcohol is a desirable thing. Dr. Richardson was the inventor of an ether spray, and he introduced methylene bichloride into surgical practice, whilst as proprietor and editor of the *Asclepiad* he missed no opportunity of

airing his pet subjects. A great believer in the value and importance of physical exercise, he was an enthusiastic cyclist and became president of the National Society of Cyclists. His career cannot be better summed up than by saying that his life has been one continual round of useful effort in the service of humanity.

Gas as an Illuminant.—The first of the Cantor lectures of the present session was given, on the 23rd inst., at the Society of Arts, by Professor V. B. Lewes—Professor of Chemistry at the Royal Naval College, Greenwich—who in his own characteristic and popular manner introduced the subject of the use of gas in domestic lighting. Professor Lewes has divided his subject into three parts, each of which will occupy attention on consecutive Monday evenings. The lecturer pointed out the misleading nature of the expression "candle-powder," and waxed rather eloquent upon the shortcomings of the candle as a standard, as well as the worthlessness of the official mode of comparison. This was made manifest when the respective merits of argand, flat flame, regenerative, and incandescent burners were discussed and practically compared. Professor Lewes' lecture was illustrated by a number of diagrams, tables, and apparatus, and his historical *résumé* of the development of the photometer since the days of Count Rumford and Bunsen was particularly interesting. Pressure on our space prevents the presentation of a detailed report of the first lecture to our readers this week, but we hope to be able to give an intelligible account of the first two in the series next week. Those interested in the question of illuminating large areas will find much food for reflection in the three lectures. On Monday next, the 30th inst., Professor Lewes will treat of incandescent mantles and burners, and of the diffusion, absorption, and penetrative power of light.

'The System of Synthetic Philosophy' is now completed, and its author—Mr. Herbert Spencer—is to be cordially congratulated upon the termination of his stupendous task. The work was commenced thirty-six years ago, and in spite of much ill-health, the original plan has been carried out with slight modification. The ten volumes which constitute a series that will have far-reaching influence for many years to come, are 'First Principles'; 'The Principles of Biology,' in two vols.; 'The Principles of Psychology,' in two vols.; 'The Principles of Sociology,' in three vols., the third just published; and 'The Principles of Ethics,' in two vols. Any one of these was enough to make the author famous, but though a breakdown due to over-tax of brain hindered the completion of the first volume for awhile, he has persisted to the end and realised an idea such as may suggest itself to many men but remain in the vast majority of cases a mere dream of what might be.

'The Principles of Sociology' constitutes at once the most practical and the most important part of the series, and the third volume, just issued, is especially interesting and instructive to all who can appreciate the advantage of applying scientific knowledge to the details of every-day life. In the section on "Ecclesiastical Institutions" the author conveys his conception of the genesis of the religious idea; in that on "Professional Institutions" he traces medicine, dancing, music, oratory, science, law, teaching, and acting, to a religious or priestly origin. These two sections have already been published separately and were widely commented on in the public press at the time, but the last section of the book—that on "Industrial Institutions"—is entirely new and of much greater importance than those that precede it.

The History of Industrial Institutions is dealt with by Mr. Spencer in characteristic fashion, and concludes with observations on trades unionism, co-operation, and socialism. Then follow the chapters in which an attempt is made to divine what the near future of social life will be like. The picture presented is a highly pessimistic one, the growing tendency to state socialism in France and Germany being regarded as of evil presage to the future of individual liberty. Though things are not so bad in England, more and more the State says to the individual Englishman: "That much of your property you may spend as you like, but this much we shall spend for you, either for your benefit or for the benefit of somebody else." And, in conclusion, it is prophesied that in the future an entire loss of freedom will undoubtedly be the lot of those who do not deserve the freedom they now possess.

Truth that is partly a Lie is surely the converse of "a lie that is half the truth" and, as such, to be carefully avoided by all decent people. But Mr. Labouchere, the Radical-millionaire and proprietor-editor of the paper called *Truth* (there is much in a name), in anxiety to redress fancied grievances, is particularly fond of publishing what are popularly termed "cock-and-bull" stories, in which the basis of truth is extremely slight. One of his latest fads has been to put his lance in rest for Ireland, in the matter of pharmaceutical qualifications. He says he sent a messenger to the Pharmaceutical Society's house in Bloomsbury Square to make enquiries respecting the assumed injustice that prevents Irish licentiates from practising pharmacy in Great Britain, and that some remarks were then uttered by someone representing the Secretary, disparaging the Irish qualification. If this were so, it would constitute a grave breach of courtesy, whatever the position of the culprit, but enquiry on the spot fails to throw any light on the matter, and it can only be assumed that Mr. Labouchere's young man invented the reply or went elsewhere for it.

The President of the Irish Society is stated, in a report sent to the Journal by a regular contributor, to have recently referred to the matter publicly in terms that give rise to some little doubt concerning the accuracy of the report, and we have felt disinclination to print it accordingly. If it is considered desirable for an official body to take any notice of absurd and inaccurate statements made in irresponsible news-sheets, it were surely best to communicate first with the parties implicated in the pseudo-scandal. It is an easy matter for the President of the Pharmaceutical Society of Ireland to write to the Secretary of the British Society, asking for an explanation, if there be the slightest trace of doubt concerning the falsity of the tale as reported, but we are extremely loth to believe that he went so far out of his way, in referring to *Truth's* statement, as to draw unfavourable comparisons between the British and Irish examinations, though this is what is reported. The Minor qualification in particular, according to our reporter, was described as vastly inferior to that of the Irish pharmaceutical chemist. It might not be difficult to put a very different aspect on this question, but really such comparisons are childish in the extreme, and certainly unworthy the attention of anyone occupying a prominent position in an important official body. The report sent does not state where or when the remarks referred to were uttered by Mr. Wells, nor what was the occasion. Doubtless some information on the point, and the correct version of any comments he may have made, will be forthcoming from Mr. Wells himself.

CHEMISTS' ASSISTANTS' ASSOCIATION.

On Thursday, November 19, at 103, Great Russell Street, W.C., Mr. C. Morley in the chair, the Secretary, Mr. W. Moore, read a paper entitled

SOME NOTES ON AMERICAN PHARMACY,

BY E. H. GANE,

one of the former secretaries of the Association. Mr. Gane said that pharmacy in the United States is in no more organised a condition than in England, but it must be considered from a different standpoint. The professional element finds no place in American retail pharmacy, and this is not so much to be wondered at, considering the fact that even the pursuits of the law and of medicine have not yet freed themselves from the element of trade. The American store is popularly known not by the quality of the drugs supplied, but by the quality of the products of the soda fountain, the cost of which would be anywhere from 100 dols. to 3000 dols., and ofttimes it constitutes the only fitting of any value in the store. In others the fittings would be made to harmonise, and some stores are marvels of the decorator's art. In all the more important stores most attention is paid to the soda fountain, seeing that it is the article from which most of the druggist's profits came. A good pharmacist must be a good bar-tender, and the man who can best titillate the thirsty palates of the American public is he who would secure the most trade. In window dressing the American can give the Englishman points. A bicycle artistically made from tooth brushes, an excellent model of the Brooklyn Suspension Bridge, made out of bottles of malt extract, and a full-grown cow, stuffed, to advertise a particular beef extract, were three of the designs seen in the course of a short walk. In advertising his store the American pharmacist is seen at his best. This is largely due to the efforts of two drug journals, the *American Druggist and Pharmaceutical Record* and the *Pharmaceutical Era*. The articles in those journals on this subject are well worth study, and to English pharmacists should prove of great value. The American is a pretty shrewd individual, quick to recognise and adopt new ideas, if good.

Apprenticeship is unknown in America. The would-be pharmacist starts either as errand-boy or as clerk at the soda fountain. After he has mastered the intricacies of the soda fountain he may be promoted to counterman, where he would supply cigars, candies, patent medicines, and such small amounts of drugs as the public may want. The prescription department is usually a sealed book to him until after some years' service, so that of the better side of his pursuit he knows little or nothing. In the country districts pharmacy might be described in the old expression, "pars minima ipsa puella." Here the "side lines" of the druggist are so numerous and important that pharmacy is lost, and the youth would emerge ignorant of what pharmacy meant. Preliminary experience over, the clerk would next endeavour to secure his licence to practise. This he can do in several ways. In the cities he can go before the State Board of Pharmacy, which grants a licence to practise in that particular State only, or he might go to one of the Colleges and secure his degree of Ph.G., which virtually entitles him to practise in a majority of the States. The better class of pharmacists graduates from the Colleges. The City and State Boards of Pharmacy in general are extremely lax in their requirements, and as certificates of proficiency in pharmacy their licences are valueless, with the probable exception of the New York City Board, which, being under the control of the New York College of Pharmacy, takes some trouble to grant certificates only to competent men. The requirements of the various Colleges are more severe, and in the best of these the student must spend three years attending lectures and doing practical work in chemistry and pharmacy. Many of the Colleges are excellently equipped, and they are officered in general by competent men. The schedule is arranged so that the student need not necessarily give up store work during attendance at College. The system of tuition is excellent, and distinctly superior to that followed in the English schools. There are, however, very many so-called Colleges whose system of education and graduation is nothing short of disgraceful, and it would be easy to relate the requirements of these and compare them unfavourably with certain English schools, but comparing, for instance, the New York and Philadelphia College of Pharmacy with the English School of Pharmacy, I have no hesitation in saying that the American comes first both in equipment and system of tuition.

Continuing on the education question, Mr. Gane said the fact that an institution like the Philadelphia College of Pharmacy could easily muster some 600 students who were willing to spend years in study when they could secure the state licence at a nominal expenditure of time and money spoke volumes for the future pharmacist of the United States. The social status of the pharmacist is, of course, higher in England, owing to the more democratic ideas of Americans. In general he is practically on an equality with the medical practitioner, with whom his relations are fairly cordial. In the South and West, where the professional side of medicine is more or less at a discount, the physician does not deem it unprofessional to enter into an arrangement with the druggist whereby he secures a percentage on every prescription taken to his store. The druggist usually supplies his physician with prescription blanks on which were the words, "Take this to So-and-So's Pharmacy." The prescription often bore, in addition, the words "No substitution allowed in any prescription." Substitution is to the average American physician what prescribing by chemists is to the English medical man. The cry of substitution comes principally from the South and West, where the education and knowledge of the average physician leaves much to be desired. There the physician's knowledge of materia medica seems very limited, and while he might be quite able to diagnose any disease, he does not seem able to prescribe the remedy. Looking over the prescription books of a large firm recently, Mr. Gane found but six prescriptions out of about five hundred which did not call for some proprietary remedy. Should the druggist venture to manufacture one of these from the formulæ usually given, instantly a howl went up of substitution, and the druggist is lucky if he does not get his name published in the local medical journal as a substitutor.

The physicians of the East are in some ways in advance of the physicians of other countries in that they have reached the conclusion and are willing to acknowledge that "medicine" is not an art or a science, but an "experiment." In their difficulties where they are unable to utilise existing remedies, they often apply to one of the large firms, and will work hand-in-hand with them trying to obtain some new or improved remedy which will answer in certain cases, and in this way many new preparations in every way excellent are turned year by year.

The enterprise of the best class of American firms might well be adopted by some of the conservative English firms.

The advance and betterment of pharmacy in America is largely handicapped by the foreign element, the German, curiously enough, being the greatest hindrance. Whilst they are very numerous and, as a rule, fairly educated, they to a large extent hold aloof from other nationalities. The English and French are more easily able to adapt themselves to American ideas and customs, but are in too small numbers to make their influence felt. Pharmacists of almost every nationality are to be found from Italian and Russian down to the humble store of the heathen Chinee, and there is much in each to interest.

After the paper had been read, the President, in the course of his remarks, did not altogether agree with some of the opinions expressed in the paper, and was sorry Mr. Gane could not be present, being in America, to elucidate some of the points.

A discussion followed, in which Messrs. C. E. Robinson, E. W. Hill, C. E. Sage, H. H. Robbins, and T. Morley Taylor took part. Some of the speakers thought that in respect to advertising, the general conduct of business, and the matter of education, English pharmacists might learn many useful hints from the Americans. Others believed that British pharmacists show to great advantage when compared with pharmacists in America, and that as a rule the Briton is a better educated man.

Mr. T. M. Taylor moved, and Mr. Robinson seconded, a hearty vote of thanks to Mr. Gane for his paper, and this was carried with acclamation.

THE USE OF SALVIA OFFICINALIS IN HYPERIDROSIS.—According to the *Medical Press and Circular* the ancient reputation of sage tea to counteract the night sweats in phthisis has led Krahn to experiment with the remedy in thirty-eight cases of excessive perspiration in different diseases, with good results in all but two instances. At first he prescribed the old-fashioned infusion, but ultimately found the tincture to be more active. It would be interesting to know what effect the volatile oil of sage may have as an antisudorific, since this is probably the therapeutically active principle of the plant.

LIVERPOOL CHEMISTS' ASSOCIATION.

The usual monthly meeting of this Association was held on Thursday, the 19th inst., the President, Mr. Conroy, in the chair.

The Late A. H. Mason.

The general business having been transacted, Mr. Edward Davies, F.I.C., F.C.S., as one of the oldest members of the Association feelingly referred to the death of Mr. A. H. Mason. Elected a member of the Association on Feb. 11, 1864, he attended the meetings for some years, taking an occasional part in the discussions, and contributing miscellaneous communications. Meanwhile he studied hard in his leisure time and laid the foundation of a good acquaintance with both theoretical and practical chemistry, and other branches of science. In 1870 be became Secretary, relieving him, Mr. Davies, of those duties, and in that year read his first paper on chloral hydrate. Following this he contributed at different times a number of other papers, which were marked by a thorough mastery of the theory of the various subjects, and at the same time a complete acquaintance with the practical applications of that theory, so that there was always something of interest for every member of the Association. Elected Vice-President in 1873 he reached the office of President the following year, and retained it for three years.

His scientific attainments procured his election as Fellow of the Chemical Societies of London and Berlin, and on his leaving this country he became the first president of the American branch of the Society of Chemical Industry. It would be, he was certain, the unanimous feeling of the meeting that he should move the sending of a letter of condolence from the Liverpool Chemists' Association to Mrs. Mason and family, expressing its sympathy with them in their great loss and its grateful recollection of the many services Mr. Mason had rendered the Association during the many years of his membership.

Spurious Kola Nuts.

In a miscellaneous communication Mr. Theo. H. Wardleworth mentioned that he had brought for the inspection of the members specimens of the spurious kola nuts which came on the Liverpool market some time since from San Domingo, and to which reference had been made in the *Pharmaceutical Journal* in "The Month," where they were said to resemble the seeds of *Dimorphandra* or *Mora excelsa*. He could not say that he agreed with this, for, according to Smith's 'Economic Botany,' the pod of the *Dimorphandra* is from seven to eight inches long and three inches broad, containing one seed nearly filling the pod, whilst the largest of the specimens before the meeting would not be any bigger than a large-sized true kola nut, to which they bore considerable resemblance, which was more marked when the seeds had split in half on drying.* They might be the seed of a species of *Dimorphandra*, but not of the *D. excelsa*. The Dimorphandræ, according to Baillon, are a division of the Cæsalpiniæ. The false kolas shown were said to be used for feeding cattle in the West Indies.

Sodium Bromide.

Mr. M. Conroy, F.C.S., then read a paper on "Sodium Bromide," in which he pointed out that the British Pharmacopœia standard of purity is that ten grains of the dry salt should require for complete decomposition 960 grain measures of the volumetric solution of nitrate of silver. This is equal to 98·88 per cent. of true sodium bromide. Owing to the difficulty of obtaining it from the makers of the requisite strength some experiments were tried in reference to its hygroscopic nature. When carefully dried it reabsorbed from 2 to 5 per cent. of moisture when kept in stock in a bunged jar under ordinary conditions, whilst some that had been kept in an ordinary shop bottle in a dispensary for some months lost 10 per cent. on drying at 212° F. It is therefore necessary in testing this article to observe that the Pharmacopœial requirement of strength is on the dry salt, the word "dry" evidently having been inserted in the Pharmacopœia with a full knowledge of the hygroscopic nature of the salt. Inspectors under the Sale of Food and Drugs Act have been going the round of the Liverpool chemists with a prescription, ordering sodium bromide, syrup of orange, and water. As the British Pharmacopœia standard of purity is to be taken on the dry salt, and as the salt will not keep dry in stock, it would be interesting to know what allowance, if any, is made by the public analyst for its hygroscopic moisture.

In the discussion which followed, Mr. E. Davies said that the haloid salts of sodium had always been considered hygroscopic, but in the case of sodium chloride this was explained by its contamination with sulphates. Working with a pure specimen of NaCl he had found it absorb 11 per cent. of water when covered with an ordinary bell-glass.

Otto of Rose.

Mr. Conroy next followed with a note on otto of rose. He first referred to a recent article in the *Chemist and Druggist*, in which the principle is approved of rejecting all otto, with a freezing point under 15 Réaumur=65·7 F., and buyers are exhorted to insist upon being supplied with an otto having the following physical constants:—Freezing point, 65° to 68° F.; specific gravity, at 86° F.=30° C., ·850 to ·856; optical rotation, −2°·3 to −2°·7. These figures, it is claimed, cover pure otto from all the 153 Bulgarian Rose villages. But exception was taken by a Phillippopolis correspondent to the assertion that otto with a freezing point under 65° F. "may safely be suspected of being adulterated." This correspondent stated that a very large proportion of the high freezing oils are artificially brought to a very high crystallisation point, far beyond 70° F., and may then be safely adulterated and yet attain a satisfactory average degree. Further, the variation in the freezing point of otto may be as much as 10 to 11 degrees Fahrenheit without prejudice to its purity, whilst a large number of low freezing oils are classified by connoisseurs among the very finest in point of sweetness and aroma. These oils are mostly used to mix with the high freezing oils which often turn out less satisfactory in aroma. This, observed Mr. Conroy, is reasonable, and what one would naturally expect when we consider that the stearopten, which is the ingredient that determines the freezing point of otto, is an odourless body, and consequently the more there is present in the otto the weaker it must be.

It is unfortunately difficult to obtain absolutely pure samples of Bulgarian otto of rose as typical standards, and the physical tests referred to help us very little in arriving at a satisfactory opinion in regard to the genuineness of otto. In the first place the freezing point of pure otto is said to range from 65° to 68° F., but we are also told that instead of a range of three degrees there is an actual range of ten to eleven degrees between high and low freezing otto. Experiments performed by Mr. Conroy showed that otto with a freezing point of 68° F. actually required the addition of 11 per cent. of geranium oil to reduce the freezing point to 65 2° F. This being the case within a range of three degrees, it is evident that with a range of ten to eleven degrees a much larger amount of geranium oil could be added. So much for the value of this test. As regards the value of the specific gravity test, the range given is ·850 to ·856 at 30° C. or 86° F. at this temperature. A sample of geranium oil taken from stock was ·888. With geranium oil at this gravity and otto at ·850, 6 parts of the former can be added to 32 parts of otto. This makes 38 parts of mixture at the higher specific gravity of ·856, and a sum in proportion shows it to contain 15·8 per cent. The value of this test is therefore not very great, and as it is possible to get a geranium oil of less density, or even to prepare one by fractionation, it is practically valueless.

The third test is that of optical rotation of the otto, and at first sight it appears to be a very severe one, the range being rather narrow, viz., −2°·3 to −2°·7 [this and all following determinations made in a 100 M.m. tube at 25° C. (75° F.)]. To find the possibilities of this test, the rotation was taken of a sample of geranium oil from stock. It was found to be −9°·9, and four parts of this geranium oil can be added to 72 parts of otto of a rotating power of 2°·3 to reach the limit of 2°·7. This is equal to 5·5 per cent. of geranium oil, and of the three tests it is the sharpest, but, unfortunately, we cannot even trust to this. The optical rotation of an essential oil can readily be altered by admixture with some other oil or constituent of an oil having opposite rotation. For instance, in this case 5 per cent. of citrene added to this geranium oil reduced the rotation from −9°·9 to −2°·6. This citrene was obtained in making citral and possessed very little odour, so that it would not be possible to detect it by the nose nor by our present knowledge of physical and chemical tests.

To summarise the position we are in regarding these three physical tests: The freezing point of 65° to 68° F. allows of 11 per cent. admixture of geranium; the specific gravity test at 86° F., ranging from 850 to 856, allows of 15·8 per cent. of geranium oil; the optical rotation test of −2°·3 to −2°·7 allows of 5·5 per cent. admixture of geranium oil, or with as much as we

* Mr. Wardleworth's specimens seem to have been unusually small. Much larger ones have been obtainable in London.—[Ed. *Pharm. Journ.*]

like if the rotation figures of the oil be rectified by the addition of 5 per cent. of citrene as above described.

From these facts and figures, it is very evident that, as a means of judging the purity of otto of rose these physical tests are useless for all practical purposes, and chemical tests are no better. We are therefore forced to judge in the old way by our sense of smell, the best way, in Mr. Conroy's opinion, being to dissolve one drop of otto in about 20 drops of rectified spirit, pour this into one ounce of warm water at 100 F., and shake well up. Reduced in this way, one gets a better chance of noticing any foreign oil in the otto, especially if compared with the best standard sample we can obtain, treated in a similar way. In this way a sharp nose will readily detect an admixture of 5 per cent. of geranium oil in otto of rose.

In the subsequent discussion, Dr. Symes observed that some years since when Gladstone did work on otto, he gave the gravity at 881, which is quoted in 'Pharmacographia,' where otto is said to have a right-handed rotation of + 4°. He had once put the rotation as – 3·15, and an adulterated otto had proved to be dextro-rotatory. The yield of odourless stearopten was known to vary according to the temperature at which the roses grew, the colder the temperature the more stearopten. The spermaceti method of adulteration was very clumsy and easily detected, for if the temperature fell very rapidly the spermaceti cooled out in flakes. Did Mr. Conroy examine the refractive indices of the ottos he had tested? It would be interesting to do so, and might afford valuable information The citrene to which Mr. Conroy had made reference was unfortunately too prevalent as an adulterant of many oils just at present. It is never thrown away, but is even exported to countries from which essential oils of lemon and orange are received for the sole purpose of adulterating these oils, which are then returned to us as essence of lemon, etc.

Mr. Cowley said he questioned the desirability of trusting to the optical rotation as Bulgarians were sharp enough to manipulate this so as to deceive any analyst. Mr. Wyatt, jun., could bear out Mr. Conroy's statement that so far no good chemical test had been found by which one could judge of the purity of otto. The last one he had tried was some few years since, and was said by the author Panajatow, to be infallible in the detection of geranium oil. It was a solution of fuchsine decolorised with sulphurous acid, and when shaken with a pure otto it was claimed to remain colourless, whilst with a trace of geranium oil it gradually resumed its pink colour, which increased in ratio to the amount of geranium oil present. But the trouble was that the test not only went pink with all the ottos it was tried on, but with nearly every other essential, and many fixed oils. Geranium oil (*Pelargoninm roseum*), santal oil, cedar oil, patchouly oil, andropogon or Indian geranium oil, and even castor oil all gave pink colorations.

Mr. McCaill was somewhat surprised at Mr. Conroy's results with the constants given, for he had been assured by one of the chief Bulgarian exporters that if oil were only taken which fell between the figures given, one was nearly certain of having a genuine otto supplied.

In reply, Mr. Conroy said he would try the refraction indices, as Dr. Symes had advised, and he could quite concur in the remarks on the too prevalent use of citrene for adulterating essential oils other than otto. It was sold at a price about a third that of oil of lemon, and except for adulterating it had absolutely no use whatever.

Adulteration of Musk.

A "Note on Musk" was read by Mr. J. T. Hornblower, who said that the constituents of a great many musk pods may be classed as normal and abnormal, or as "musk" and "adulterations." These adulterations may be a variety of substances, derived from the animal, vegetable, and mineral kingdoms. Mr. Hornblower had never come across the blood or liver "substitutes" mentioned by Pereira, but he has frequently met with cut skin, hair, paper, and small lumps, and even bars of lead. Some little time ago, on rubbing down the contents of some pods with S.V.R., he noticed that on emptying the liquid in the mortar into a bottle a heavy sediment was left behind. This had all the appearance of dark red sand, but on rubbing it again in the mortar the colour changed to a bright scarlet or vermillion colour. Analysis proved it to be cinnabar.

The President said the musk pod Mr. Hornblower had obtained the cinnabar from was one of the best kinds, a blue skin Tonquin. In addition to the adulterants named, Mr. Conroy said he had found at various times ground coffee, but never cinnabar.

Messrs. Wokes, Cowley, Wardleworth took part in the discussion which followed, and after votes of thanks to the authors of the papers, a very successful meeting came to an end.

SCHOOL OF PHARMACY STUDENTS' ASSOCIATION.

OPENING MEETING.

The opening meeting of the session was held on November 19, when an introductory address was delivered by Professor J. Bretland Farmer, M.A., of the Royal College of Science, South Kensington, the President, Professor Green, in the chair. When the minutes of the last meeting had been read, Professor Green introduced Professor Farmer to the meeting, who then delivered his address on "Plants as Irritable Organisms," a report of which appears at page 464.

At the conclusion of the address, Mr. E. M. Hill, as a past student, in a few well-chosen remarks, proposed, and Mr. E. A. Umney seconded, a vote of thanks to Professor Farmer for his exceedingly entertaining and interesting address.

The following are the officers elected for the ensuing session:—

President.—Professor H. G. Greenish.

Treasurer.—Professor J. Reynolds Green.

Vice-Presidents.—A. Lapworth, D.Sc., J. Lloyd Williams.

Secretaries.—Charles E. Ashby, Harold Wilson.

Committee.—C. Happold, S. C. Hovenden, W. Lean, R. D. Littlefield, A. Miles, W. B. Nelson.

GLASGOW AND WEST OF SCOTLAND PHARMACEUTICAL ASSOCIATION.

The fortnightly meeting of this Association was held on Thursday, November 19, Mr. W. L. Currie, President, in the chair. After the minutes of the "At Home" had been read, the Chairman moved that the Secretary, Mr. J. Anderson Russell, be instructed to write to Messrs. Baird and Tatlock, and Mr. Riddell, Glasgow, and Messrs. T. and H. Smith and Co., Edinburgh, thanking them for their kindness in sending exhibits to that gathering. This was unanimously agreed to.

The Relation of Medicine to Pharmacy.

Mr. Alexander Laing then proceeded to read a paper on the relation of medicine to pharmacy. He said: In these days of scientific specialisation it of necessity follows that certain groups of workers are arranged in different branches of labour, the whole field being greater than any individual, however great his mental capacity, can efficiently cultivate. Hence, medical science is divided among numerous specialists. Medicine may be defined as a science and art directed to the prevention and cure of disease; pharmacy as the art or practice of preparing, compounding and preserving medicines, and of dispensing them according to the prescriptions of medical practitioners. Although pharmacy is dependent on therapeutics, it does not follow that the pharmacist has a knowledge of that section of medical science. But, virtually and actually, he has an ample knowledge of therapeutics, acquired from the best authorities, the same, in fact, as the medical practitioner derives it from—his own observation and experience. A knowledge of medicine is not exclusively the possession of any person, although the practice of it as a profession is. Until about forty years ago, many of the general public, even among the working classes, had a useful knowledge of simples, and the household benefited by it. We are much beholden to the Journal for instructive matter on many topics. Unfortunately for us, it is not well instructed in regard to what concerns us most, viz., the position of pharmacy. We look up to its editorial excellence and bow before the eminent scientific men who show us glimpses of their great ability as scientific chemists. From their happy hunting grounds, the Elysian fields of original research, they look over the hilltops of pharmacy, oblivious to the conditions of those who toil round the base, and they send us the cheerful cry, "Come up hither!" No doubt it is very fine up there, but it is not pharmacy. We have obligations and duties to keep us down here, and we must and will work out our own salvation. The *Pharmaceutical Journal* a few weeks ago had a letter from a medical practitioner who gives pharmacists the credit of being mere measurers and mixers of drugs, while all or nearly all the important pharmaceutical work is done in the laboratories of the great drug houses and pharmacies. We chemists are only handers-over of the stuff prescribed by the medical gentlemen, who are,

seemingly, so exhausted by the difficult and arduous work undergone in diagnosing the case, that they are incapable of devising a prescription, and emerge smiling and elated by ordering some ready-prepared nostrum with a nice-sounding name, sent out broadcast by the great drug houses which have authority in regard to therapeutics. That is the relation of medicine to pharmacy in these palmy days of scientific light and leading. There will shortly be a new edition of the British Pharmacopœia. Poor belated Pharmacopœia, antiquated before issuing from the press. In connection with that work, Mr. Laing said it had been strongly impressed upon him that the medical faculty would resent any mere chemists or druggists making suggestions on the making or taking of drugs; but an enterprising drug house, or even an individual pharmacist has only to send a representative with samples, or a descriptive pamphlet to the medical practitioner, and he tries the effect on his patients at the earliest opportunity. The therapeutic effects are not due to the contents of the mixture, whatever it may contain, but to some wonderful efficacy in the name of the maker. The Pharmacopœia also fosters the sale of "patent" medicines, for the public is not very discriminating, and yet we hear of complaints from medical men in regard to the use or abuse of "patent" medicines. The duty of pharmacists is to second the labours of the physician by giving out what he chooses to prescribe. They have no public responsibility. They have no right to think about it whatever. They are only to act as a service bridge between medicine and manufacturing chemists which come as boons and blessings to suffering men and women. This "progress" in medicine is the ancient appeal to faith for healing in a new form. It is quite time now to follow reason and experience in a rational way instead of rushing hither and thither in pursuit of a new elixir of life, made in Germany or elsewhere. The medical faculty have no definite knowledge of their composition, and they cannot ensure their supply. It is an admission of weakness that they cannot devise a standard preparation, and the result is that modern pharmacists must keep a stock of preparations the chief distinction of which lies in the colour of the wrapper in which it is done up and the maker's name. Would it not be better and more becoming, in the interests of scientific progress, to give over the devising of standard formulæ to the hands of a recognised body of pharmacists, whose function it is to prepare all the requisites the medical profession require, so that a British Pharmacopœia of living value instead of a dead letter one might be compiled.

In the discussion which followed,

Mr. D. Watson said that there was rather much tendency in Mr. Laing's paper to hold on to what was old. Pharmacy had advanced with the times, and whatever might be stated in objection to preparations that were manufactured, they must always bear in mind that the reputation of certain firms had been achieved just in the same fashion as individual pharmacists might achieve distinction in their sphere of pharmacy. That point should not be lost sight of in arguing regarding manufactured preparations. Of course he did not in the slightest maintain the right of a medical man to prescribe a preparation he did not know the actual constituents of, but provided he did know and judged from therapeutical effects, he thought they could not blame him if he should adhere to that preparation until the pharmacists provided him with a better preparation.

Mr. A. McKellar said he agreed with a great deal that Mr. Laing had said. When they saw medical men ordering So-and-So's preparations indiscriminately, whether for boils or indigestion, they were inclined to think that their therapeutics were largely derived from advertising columns. Pharmacy and the medical profession seemed to be getting further and further estranged every year. The small place that pharmacy occupied in the medical curriculum was a crying shame. To think that fifty-two hours' instruction, given in the loose manner it was, should be considered sufficient for a man to claim a full knowledge of pharmacy was ridiculous. They only learned enough to make them more dangerous than they were before. They took up preparations, of which they knew very little, merely because certain effects were said to come from them.

Mr. James Moir said that he agreed on the whole with what Mr. Laing had said. No doubt there were many good nostrums and many bad ones. It was the thing most largely advertised in the medical journals that was being prescribed by medical men. As far as Glasgow was concerned, it did not very much matter what a Glasgow chemist turned out; unless a thing came from London or from some other place at a distance, medical men would not have it. There was not the sympathy between the pharmacists and the medical men that there ought to be.

Mr. Dunlop said he agreed with Mr. Watson that pharmacy had advanced, but still he thought that the relation of medicine to pharmacy had been very much abused. Most druggists who had to deal with the older members of the medical profession knew that they were students of the Pharmacopœia. It was the modern medical practitioner who had no knowledge of pharmacy, and gave them factory-made articles to dispense. In many cases they had to dispense proprietary articles while they had the drugs in their premises.

Mr. J. H. Hoseason said the Pharmacopœia was in very good hands. In the next Pharmacopœia they would have a very much better work than the present one. For some years he had been engaged teaching medical students. He quite agreed with what Mr. McKellar said, that the amount of pharmacy they got was much too small. If they taught a medical student how to prescribe, and let him recognise his own drugs, and let him see the value of them, and the why and the wherefore of using them, the tendency on his part would be to prescribe those things that he knew. If medical students knew how to manipulate drugs, pharmacists need not trouble very much in the matter.

Mr. J. Anderson Russell said that Mr. Laing's paper reminded him of one which he read last year on proprietary articles. At that time they sent a resolution to the Council of the Pharmacetical Society, asking it to draw the attention of the Medical Council and some other bodies to it. The matter was referred to a committee, and they had heard no more about it. He thought that he should be instructed to make inquiry regarding the resolution. Mr. Laing had put it pretty strongly against the introduction of proprietary medicines and new medicines altogether The corrective to the bad relationship between medical men and pharmacists would be, both the General Medical Council and the Pharmaceutical Society taking more steps than they did at present in regard to keeping those who practised under them in line. The General Medical Council should take a little notice of the new preparations coming into the market, not waiting until a new Pharmacopœia was issued, but join with the Pharmaceutical Society in giving them an interim collection of formulæ which were coming into general use so that medical men might select them instead of those by particular makers.

The Chairman said that he was disappointed at the manner in which Mr. Laing had treated his subject. He would rather have seen it treated on a much broader basis, because what Mr. Laing had given was really a kind of tirade against proprietary preparations. He had no objection to any man using his brains in a proper fashion, and if he discovered some genuine drug, or active part of a drug, which was going to benefit mankind, deriving profit from it. A man who used his brains in that fashion in active research was entitled to get all the benefit that accrued from his labours, but he objected that those terrible lists of combinations that any chemist was capable of concocting himself, should be foisted upon the public by medical practitioners. It was a crying evil, and ought to be put a stop to if it was possible, but he was afraid it was not. The medical men of the present day turned out from our Universities knew no more about pharmacy than a three-months' apprentice; if they knew more they would not turn out such extraordinary prescriptions as they sometimes did. Mr. Currie concluded by moving a vote of thanks to Mr. Laing.

Mr. Laing having replied, several new members were enrolled and the meeting separated.

PHARMACEUTIAL CHEMISTS' AND APOTHECARIES' ASSISTANTS' ASSOCIATION OF IRELAND.

ANNUAL MEETING.

At Dublin, on November 20, the annual meeting of this Association was held at the Pharmaceutical House, 67, Lower Mount Street, Mr. J. Boyd Alister, M.P.S.I. (president), in the chair.

Mr. Hardy, the Hon. Secretary, read the annual report, which showed that a goodly number of successful meetings had been held, at which topics were discussed of considerable interest to all connected with pharmacy, and in particular to students preparing for examination. The Committee had to complain that some members failed to give that active support so generously given by their fellow-members, and thought this state of things might be largely due to a false impression that the Association had been formed in a spirit of hostility to the employers,

and as an antagonistic element to the Pharmaceutical Society The actual list of members was upwards of one hundred, and the Committee saw no reason why this number should not be far exceeded in the near future. They thought it would be advisable to present each member of the Association with a copy of a trade journal if possible, and they would also suggest an increased number of social meetings.

Mr. J. Tyrie Turner, M.P.S.I., Honorary Treasurer, next read the Treasurer's report and statement of accounts. The receipts, he was happy to say, not only enabled them to pay their way, but left them a handsome balance on the right side. Thanks to the generosity of the Pharmaceutical Council for so kindly giving the Association the use of its present very pleasant quarters, the current expenses were merely nominal. He might mention that the recent smoking concert cleared a profit of £5, which had been placed to the credit of the Association. Without regarding current or overdue subscriptions and other sources of income, the Association had at present the sum of £8 3*s*. 2*d*. to its credit.

The Chairman, in moving the adoption of the reports, referred in eulogistic terms to the present condition of the Association. He thought the members had good reason to congratulate themselves on the success which had attended their efforts during the past year. The Association was now firmly fixed, and had, he felt assured, a brilliant future before it.

The report and statement of accounts were unanimously adopted.

A number of new members having been elected,

The Chairman formally declared that all offices of the Association were now vacant, and invited nominations of fit and proper candidates to fill the same. Mr. McCarthy was elected President, Mr. O'Sullivan Secretary, and Mr. J. Tyrie Turner Honorary Treasurer. Mr. H. Hunt was elected Assistant Honorary Secretary, and the following were elected to act as a committee during the ensuing year:—Messrs. Smith, Savage, Johnston, Wilkin, Ashe, Harris, Ardle, Taylor, Campbell, Alister, McManus, Barrett, Nagle, Watson, Walsh, Hegarty, Parker, Salisbury, Dunwoody, and Corcoran.

The advisability of the Association supplying a journal to each member was then discussed. Mr. O'Sullivan said the late Committee had given the subject much consideration, and was of opinion that a copy of an official organ should be supplied to the members. The old Committee had been in communication with the trade press on the subject, and no doubt the new executive would follow the matter up. The subscription to the Association was 10*s*. per annum for assistants, and 5*s*. for apprentices, payable in half-yearly instalments of 5*s*. and 2*s*. 6*d*. respectively. The Committee found that if a certain number of members agreed to pay their yearly subscription in one sum the Association would be able to put the thing into working order, and have a copy of the journal selected sent to the members' residences direct from the publisher in London. The Chairman said it would be a very great advantage to the members to have a trade journal sent free to their residences. He thought that the journal which was most intellectual and entertaining and most fully reported their meetings should be appointed the official organ of the Association.

Mr. Hardy said he thought the members would all prefer the *Pharmaceutical Journal*, which, in his opinion, was much the best paper of the kind published. It was both scientific, newsy, and generally up to date, and it was, besides, the most professional paper that could be procured anywhere. The *Pharmaceutical Journal* had gone to the trouble of providing a reporter for their meetings and placed a considerable amount of space at their disposal, and provided they could arrange in regard to price they should certainly appoint the *Pharmaceutical Journal* as their official organ.

It was finally resolved to circularise the members on the subject asking them to state the name of the paper they wished to be appointed the official organ of the Association, the most votes to determine the question.

A cordial vote of thanks was passed to the outgoing officers, to the Pharmaceutical Council for so generously giving accommodation to the Association for holding its meetings in the Pharmaceutical Society's House, to the press, and to the many kind friends who had interested themselves in the Association.

Mr. McCarthy, the new President, was then moved to the chair, and suitably acknowledged the vote of thanks to the outgoing officers, whilst, on the motion of Mr. O'Sullivan, the best thanks of the meeting were conveyed to Mr. Featherston for so kindly presiding that evening.

NEW IDEAS.

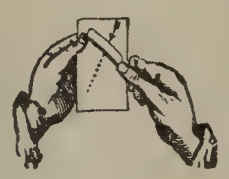
[*Inventors and manufacturers are invited to submit specimens of novelties, descriptive notices of which will be inserted for the information of readers of the Journal. Whenever possible, illustrative blocks adapted to the width of the Journal columns should accompany the particulars sent. Address: Editorial Department, 17, Bloomsbury Square, W.C.*]

A NOVELTY IN DYEING.

Who has not suffered in colour and temper as the result of experimenting with aniline dyes—seemingly so simple in use and truly so brilliant though erratic in the results produced? And what retailer has not wasted hours in explaining how to use them, and been inflicted with ghastly tales concerning the horrors that have ensued on misinterpreting his instructions? But all this is changed now. THE MAYPOLE SOAP SYNDICATE, LTD., of 98, High Holborn, London, W.C., has introduced an article that washes as well as dyes, and a marked peculiarity of it is that one cannot colour one's hands with it, try as one will. MAYPOLE SOAP, then, has a future before it—a brilliant rainbow-tinted future withal—and those who have not yet proved for themselves its exceptional excellences should hasten to get a fourpenny tablet and do so at once. Though only recommended by the manufacturers for dyeing silks, satins, cottons, feathers, laces, etc., it seems not altogether unsuitable for woollen goods, but doubtless there is good and sufficient reason for not using it for this purpose. Any shade of colour can be obtained, and the dye is guaranteed not to wash out or fade.

BARKER'S SHAVING PAPER.

Those chemists who sell toilet articles and have not yet stocked Barker's Shaving Paper, will benefit themselves and their customers by introducing this useful toilet accessory. It is put up in a variety of sizes and shapes in packets and boxes from 6*d*. to 6*s*., and once used will be continuously wanted. By wiping the razor on this paper the edge acquires a keenness and evenness which can only be appreciated by those who enjoy the luxury of a shave; and the paraphernalia of strops, pastes, and other disappointing articles can be dispensed with. Messrs. F. BARKER AND SON, of Finsbury Park, are the sole manufacturers, and it is supplied by all the wholesale houses.



SOME CHRISTMAS NOVELTIES.

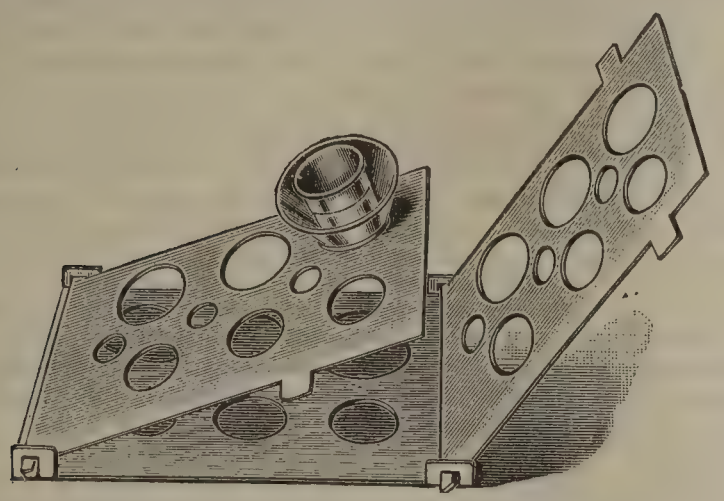
Amongst the Christmas novelties suitable for presents supplied by Messrs. BLONDEAU ET CIE, of Malden Crescent, N.W., are Vinolia perfume caskets with artistic covers, lined with silk and containing two bottles (1*s* 3*d*. size) of assorted perfumes at 26*s*. per dozen, or two 1*s*. 9*d*. cut-glass bottles at 40*s*. per dozen. The dainty Vinolia shaving soap vase of hand-painted Doulton ware, with lid and cake of shaving soap, retailing at 3*s*. 6*d*., and shaving sticks in fluted ivory-like and gilt cases, make a very effective display. Lypsyl (an emollient for the lips) is also put up in these styles. During a recent conversation with one of the principals our representative was told that every difficulty had been overcome in arranging with many thousands of customers to adopt the firm's system of protection against cutting, which was one of the earliest in the field, and that a very friendly feeling had thus been engendered. As an instance of the vast business carried on by this firm, it may be stated that the yearly consumption of otto of roses alone is about 5000 ounces.

ALUMINIUM FILTER FOR TOURISTS.

The handy pocket filter for tourists, made by the MAWSON FILTER COMPANY, whose filtering media continue to be very highly spoken of by eminent chemists and bacteriologists, has been further improved by constructing it, as far as possible, of aluminium. It is thus rendered extremely light and portable. For the information of readers who have not seen any form of this useful apparatus, it may be stated that it consists of an aluminium cylinder, 3 inches by 2 inches, in which are packed the layers of filtering material. These are covered with a layer of asbestos, to prevent the small particles of charcoal falling out, and the whole is secured by a perforated aluminium plate. A length of flexible tubing and an aluminium mouthpiece completes the filter, which can be dropped in a pond and a draught of pure water drawn through the tube. The apparatus also serves as a filtering syphon, and packed in a neat tin case with a cord to suspend it from the shoulders constitutes as compact an outfit as can be desired.

A HANDY CACHET MACHINE.

The latest form of cachet closing apparatus is one offered by Messrs. THOMAS CHRISTY AND Co, 25, Lime Street, E.C., which has been constructed especially for chemists having a limited demand for cachets. This apparatus differs from the larger sizes only in construction and not in the system of its manipulation. It will close three at a time of any of the six stock sizes of cachets, whereas the larger sizes close twelve at once. This small apparatus,



called the "special," is supplied at ten shillings complete, and closes the cachets in the well-known neat, cleanly, and quick way. Like all the various sizes offered by this firm it is in a condition at all times ready to close the particular size of cachet wanted. There is no adjustment required, and nothing to get out of order. We understand that the demand for very large sizes of the Morstadt apparatus, closing two, three, six or more dozen cachets at a time is steadily increasing. It is not to be wondered at that cachets increase in popular favour, for samples of the present make of cachets are as attractive as such things can well be made.

LILAC QUINTESSENCE.

The manufacture of perfumes is not usually a profitable addition to the average chemist and druggist's business, success in this direction being somewhat of a rarity. Usually, therefore, it resolves itself into the preparation of lavender water, eau de Cologne, and the dilution of French essences to the point at which they will yield a reasonable profit when retailed at a price that suits the purse of the district. By using ROUSE BROS.' Lilac Quintessence, however, it becomes possible to get beyond these narrow limits, for this preparation, when suitably blended according to the formulæ supplied by the makers, serves as the basis of light delicate essences of white lilac, clove pink, and moss rose, which can be prepared at an outside cost of fourpence per ounce. Engraved labels are also supplied gratis with each bottle. both for ordinary and sample bottles, whilst the perfumes can be obtained ready prepared if desired, in square cannon (Lundborg) bottles with white metal or gilt sprinklers. These allow of a good margin of profit, and should constitute an attractive line for Christmas trade.

'COCOA: ALL ABOUT IT.'

The extent to which the manufacture of cocoa has become a staple industry is emphasised better perhaps by the handsome volume in which "Historicus" (Sampson Low, Marston and Co.) treats of the history, use, and manufacture of this important dietetic article, than would be possible by any manipulation of statistics. Information regarding the modern system of manufacture has been gathered at Messrs. CADBURY'S works at Bournville, the "Worcestershire Eden," where this enterprising firm now employ some two thousand workpeople in the preparation of cocoa, chocolate, and all their toothsome combinations. The whole process is described, from the sifting, picking, and roasting of the cocoa berries, to the packing of the world-famous cocoa essence, one of the purest and best things of its kind, and Mexican chocolate, than which nothing finer can be obtained. Everything required by the firm is, as far as possible, made on the spot, and the system of payment "by results" is shown to yield most satisfactory results, both to employers and employed. Little wonder is it, when one considers the pitch of excellence to which the especial industry of Bournville has attained, that the name of Cadbury is a household word, and that the products of the midland cocoa city are known and appreciated everywhere.

'HOMELY HINTS FOR THE HOUSEHOLD.'

This handy booklet, published by PROCTOR, SON, AND CLAGUE, of Newcastle-upon-Tyne, affords a good illustration of the manner in which pharmacists can render service to the public, and at the same time help themselves. Here, in the space of forty pages, we find practical hints on what to do in case of accidents, on baby's ailments, baby's food, poisons and their antidotes, sickroom management, cookery for the sick, care of the skin, teeth, and hair, household simples, disinfectants, infectious diseases, cleaning, etc, etc. There is a useful index, and also a list of medical practitioners in the northern city, with their addresses and telephone numbers appended. John Proctor, of Dundee, who established the business at the head of The Side, in 1768, may have been an enterprising individual, but his great-grandson proves that he and his partner are in no whit behind in that respect.

SOME NEW REMEDIES.

Amongst the more recent therapeutic agents supplied by B. KÜHN, of St. Mary-at Hill, London, the new Colchicine Salicylate Capsules attract special attention by their beautiful finish. Each one contains 0 25 Mgm. of chemically pure colchicine dissolved in 20 Cgm. of natural methyl salicylate, extracted from *Betula lenta*. Another novelty is Tannalbin, a light brown tasteless powder which is not affected in the stomach, but undergoes gradual decomposition when acted upon by the intestinal secretions, and so exerts a continuous astringent action throughout the intestinal tract. Then there is Bengué's Ethyl Chloride in an improved form of bulb which possesses two available jets. This liquid is an excellent local anæsthetic, and the new bulb has two advantages —the operator has the choice of a straight or curved neck, and the second spray is available for use if by any means the first should become temporarily stopped.

PERLOIDS.

Homœopathists require novelties no less than allopathists, and this Messrs. KEENE and ASHWELL, of 74, New Bond Street, W., provide in the "perloids" recently introduced, which are claimed to be more convenient than pilules and tinctures, as they are more economical, do not require dropping or mixing with water, contain an exact number of drops, do not evaporate, keep well in any climate, and are particularly useful when medicine requires to be taken during the night. They are prepared to equal 1, 2, or 5 minims of the tincture, and supplied in bottles containing about 140, 100, or 60 respectively. Being flat on one side they do not roll about like pills, and for travellers they seem particularly convenient. The "Camphor" and "Eucalyptus" perloids are distinctly popular lines, and ought to sell freely.

A CELLULOID DAMPER.

A novelty introduced by THOMAS CHRISTY AND Co., in connection with their cachet machines, is a most useful damper made of celluloid. To use it, a cork in the handle is removed, the whole damper placed in lukewarm water until a projecting piece of felt is thoroughly saturated, and on inserting the cork into the handle whilst the latter is full of water the damper is ready for use. If the felt is too wet, all that is necessary is to press out the water, if too dry press the flat part of the celluloid damper and from the interior water will stream into the felt. For damping cachets the damper is used in the same way as a copying brush, which it closely resembles in shape. It is needless to say that this damper will be found most useful for moistening labels, etc.

SOME ENGLISH-MADE SOAPS.

German medicated soaps and French toilet soaps will not improve by comparison with those made by the historic firm of ALLEN AND HANBURYS, LTD., which has fitted up new premises with all the latest improvements for the manufacture of those articles. The basis from which these soaps are made is of an exceptionally fine quality, being prepared from perfectly good, pure, and indeed edible fats, and though nearly neutral it produces a silky lather, leaving a sensation of great smoothness on the skin. It is subsequently superfatted, milled, medicated, and compressed by the firm. The series of "Allenburys'" medicated soaps includes all the more useful remedies which can be advantageously exhibited in this form, including Beech Tar, Benzoin, Boric Acid, Camphor with Menthol or Peru Balsam, Carbolic Acid, Coal Tar, Ichthyol, Juniper Tar, Menthol, Eucalyptus, Naphthol, Resorcin, Salicylic Acid, Sulphur, Sublimate, Terebene, Thymol, and White Precipitate, but the firm will be pleased from time to time to add any to

this series that may be suggested by the medical profession, if on trial they are found likely to be of lasting utility. The "Allenburys'" Baby Soap is specially milled, made only from pure and fresh materials, and is free from caustic alkali, strong irritating scents, and all adulterants. It is slightly antiseptic, emollient and neutral, since caustic and even superfatted soaps injure the baby skin. Other saleable specialties are Dodd's Borax and Camphor Soap (Patented), boxes of Preservative Tooth Soap perfumed with wintergreen oil, and the "Latour" Toilet Soaps. A printed guarantee appears on the inner wrapper of each tablet, to the effect that the soap is pure and neutral, contains no bad fats, no silicate or sulphate of soda, no poisonous mineral colours, no caustic soda, chalk or talc, and only the smallest possible percentage of moisture. In addition to the soaps mentioned above, attention must be specially drawn to the fact that ALLEN AND HANBURYS, LTD., are in a position to manufacture soaps for chemists, bearing the retailer's names or fancy titles. Specimens of such soaps leave nothing to be desired.

PEARL-COATED PILLS.

Though everyone makes coated pills nowadays, the pioneers of this art—Messrs. COX AND CO., of Brighton—easily maintain their prominent position as makers of tasteless pills, which are beautifully finished, quite soluble, and as well made as it is possible for pills to be. Proof of this statement is readily afforded by specimens containing potassium permanganate, quinine sulphate, compound rhubarb, and active aperient pills, all of which serve to show that the firm's standard of excellence is uniform.

FLEXIBLE GELATIN CAPSULES.

The preparation of flexible gelatin capsules is a comparatively new addition to the business of Messrs. RAIMES, CLARK, AND CO. of Edinburgh, but judging from specimens recently submitted, the firm is already in a position to compete with other makers on at least equal terms. The specimens include the following:—Gregory's Powder, half a teaspoonful; Copaiba, 10 minims; Castor Oil, 60 minims; Easton's Syrup, the equivalent of 30 minims; Blaud's Pill, the equivalent of three pills; Quinine Sulphate, 2 grains; Liquid Extract of Cascara, the equivalent of 30 minims; Turpentine, 10 minims; Eucalyptus Oil, 5 minims; Guaiacol, 1 minim in oil; Ergotin, the equivalent of 5 grains; Creosote Carbonate, 10 grains; Creosote, 2 minims in oil; and Copaiba with (Oil of ?) Cubebs. They vary in length from 8 to 32 millimetres, but from the smallest to the largest all are beautiful specimens of the pharmacist's art. They are also very readily dissolved, and the contents where likely to deteriorate by oxidation seem to be perfectly protected.

NOVELTIES IN ADVERTISING.

Readers who desire hints on advertising may obtain any number from Messrs. NEWBALL AND MASON, of Nottingham, who must have exhausted the ingenuity of several smart individuals in producing the variety of printed matter used to attract attention to their Extract of Herbs, Ginger Extract, Essence of Coffee, and Wine Essences. In view of approaching Christmas parties at which children of tender and more mature years will alike require pleasant thirst quenchers, the Wine Essences receive special attention in the avalanche of literary matter with which the wares of this firm are judiciously pushed.

OBITUARY.

PEAKE.—On November 3, Thomas Peake, Chemist and Druggist, of Bristol. Aged 57.

NICHOL.—On November 18, John Kinninmont Nichol, Chemist and Druggist, 139, High Street, Edinburgh. Age 43. Mr. Nichol died suddenly at his residence 4, Nicolson Square. He leaves a widow.

PROCKTER.—On November 19, Richard Edgcumbe Prockter, Chemist and Druggist, of Cheltenham. Aged 89. Mr. Prockter was a Cornishman who settled in Cheltenham more than sixty years ago, and continued in business as head of the firm of Prockter and Forth until his retirement four years ago. He had been a member of the Pharmaceutical Society from 1842 to 1887.

BOTHAM.—On November 20, George Botham, Chemist and Druggist, of Levenshulme. Aged 56.

LUND.—On November 20, Joseph Robinson Lund, Chemist and Druggist, of Bradford. Aged 53.

PHILLIPS.—On November 20, James Phillips, Chemist and Druggist, of Everton Road, Liverpool. Aged 61.

CORRESPONDENCE.

EXPLANATION AND APPRECIATION.

Sir,—At the meeting of our local Pharmaceutical Association, on the 19th inst., I deemed it my duty, in the interests of pharmacy as a whole, to animadvert on the Journal, *per se*, seeming to indicate the rightful course for pharmacists to pursue, hence seeking to dominate their will to its conceptions. I impute it as a fault to the strenuous inertia manifested by the Council of the Society, "Fair fa' its honest sonsy face." By it only, openly and honestly, our policy and progress must be shaped.

Of the Journal, in regard to its general features and the position it fills in pharmaceutical affairs, I have the highest possible opinion. In ministering to the needs of retail pharmacy, it leaves little, if anything, to be desired. The addition of prices current at the weekly drug markets and notes on supplies, since it has been adopted, has been entered into not haltingly, but thoroughly, and this addition practically completes the effectiveness of the Journal as the "organ of retail pharmacists." These market reports are of essential service; being in the form of a supplement, together with interesting items of information of more or less passing moment, they may be retained or discarded without mutilating the Journal proper, and meet every want.

The special articles on photography, microscopy, and other technical papers—interesting, educative, reliable, and of practical value—I have appreciated very greatly. Query: When the Journal takes such pains to give masterly instruction on these matters, why does it not more generously recognise the fact that pharmacists are of necessity compelled to devote themselves to more than the professional duties of pharmacy?

The special historical and descriptive articles have also afforded me much pleasure. The personal notes and the accounts of life and work amongst local pharmaceutical bodies throughout the length and breadth of the land show what powerful organised force lies at the command of the Pharmaceutical Society if it only knew how to mould it. One other pleasing feature, in my opinion, is the absence from its advertisement pages of the all-pervading quack nostrum. Its advertisements, on the whole, are such as make it worth while going through them with almost as much attention as through the body of the Journal. The strength of mind, vigour of tone, and decidedness of its editorial utterances, though they run counter to my concepts, are to me more admirable than weakness or vacillation, and the pharmacist who is not within its circuit is not doing his duty either to himself or to his calling.

Glasgow, November 23, 1896. ALEXANDER LAING.

SOME COMMENTS AND SUGGESTIONS.

Sir,—At page 428 of the current volume of the Journal I notice you ask the proprietors to communicate any ideas they may have for the improvement of their paper. I, as one of the owners, think this a favourable opportunity to express myself on the matter.

There is no doubt that with a certain class of subscribers the Journal was always unpopular, and will continue to be so. It has got a name for heavy reading, or for containing matter beyond the intellectual capacity of the average grumbler, and you know the old adage about giving a dog a bad name. Personally, I liked it better the old way, even when an apprentice of the Society. At the same time it must be admitted that the changes recently made in the Journal find favour with a good many.

Items I should like to mention as improvements are the notes on photography and microscopy, which—as special articles in the Journal heretofore have been—may be considered thoroughly reliable (apologies to Mr. Carter). The articles on physical chemistry are exceedingly good, and may be commended to all our young men preparing for examination, and even to some of those in whose hands the said young men may afterwards find themselves.

By studying these articles one may get a fairly comprehensive grasp of a subject very fascinating, albeit to some rather difficult—the borderland between chemistry and physics. The greatly-increased information you give concerning our examinations and the space you devote to giving it in your educational number are also highly commendable, and have been welcomed by prospective candidates, as well as by those interested in the promotion of education among pharmacists. The market reports do not concern me greatly, but I am sure they must prove of great value to those interested in these matters.

When the enlarged issue was first published, and for some time afterwards, the Journal was received by subscribers folded in three;

recently it has been sent simply folded in two. That may seem a very small matter to some, but I assure you it has been the cause of my reading the paper with a greater degree of comfort than I previously could. It is the small things that really count in this life after all.

Now I venture to offer a suggestion or two, the adoption of which, I imagine, would tend to increase the usefulness of the Journal, always, of course, with the proviso that the suggestions are feasible.

I think it would be a distinct advantage to have fuller law reports, more especially of those cases in which there is a breach of the Pharmacy Act, and also those which come under the Sale of Food and Drugs Act. The former appeal to those who are continually asking what the Society is doing for them, and a full, true, and particular official account of this branch of the Society's work might, and I believe would, bring some additions to membership, while it would help to retain some of those we have. The other cases concern the entire trade, perhaps I may say more particularly those engaged in manufacturing, and serve to impress upon chemists more than any amount of talking and good advice to them will do the necessity for occasionally testing their stock.

Finally, I would like to see the Journal taken more advantage of by its proprietors. There are certain things in the government of the Society south of the Tweed, and in the, let us say, management (not goverment) of the Society north of the Tweed, that do not commend themselves to many, yet it is only occasionally that one does summon up courage to give his views. And when a Bayard does appear *sans peur et sans reproche*, after all *cui bono?*

At the same time, I should like to impress upon my fellow craftsmen that if they have anything to communicate to their pharmaceutical brethren, if there is anything they wish remedied, or if they think they can improve the Journal by any suggestions whatever, they ought certainly to take advantage of the columns of their paper without scruple and without diffidence; without scruple because they are justly entitled to do so, and without diffidence owing to their confidence in the integrity of the Editor to do that which is just, true, and upright.

Leith, November 21, 1896. GEORGE COULL.

X-RAYS FROM GLOW-WORMS.

I see by one of the daily papers that "X-rays are produced by the ordinary glow-worm." Curiously enough, in June of this year when in North Wales, I made some experiments on this very subject. Taking some Ilford special rapid plates, I covered them with different thicknesses of canary paper, black paper, etc., and also ferrotype plates. After catching some brilliant glow-worms I placed them upon the sensitive plates and covered them with tumblers, leaving them thus for an hour. On developing these plates I found distinct proof that where ferrotype alone had been used the light of two glow-worms had penetrated, but discovered nothing upon the other sensitive plates.

Leeds, November 17, 1896. FRED. REYNOLDS.

ASHWORTH'S METALLIC COMB BRUSHES.

Sir,—In reply to Mr. W. H. Smith's inquiry in the Journal, the brushes are made by Elijah Ashworth, Moss Brook Works, Collyhurst, Manchester. In India and elsewhere they had a large sale owing to the superstitious regard of the uncleanness of everything porcine, including bristles.

Newcastle-on-Tyne, November 20, 1896. T. MALTBY CLAGUE.

BRUCINE AND NITRITES.

Sir,—In the *Ph. J.* of October 31, page 378, is described "an extremely sensitive reaction," said "to detect one part of nitrous nitrogen in 640,000 of water." Proceeding as directed I failed to get the colour indicated. A solution of potassium nitrite, ·01 gramme in a litre of water was tested—no colour developed in five minutes (as stated), nor in an hour. After standing twelve hours only a light brown colour resulted, no darker than that given by solution of potassium nitrate of the same strength similarly tested (the reaction is said to give no result with nitrates). The test thus failed with one part of KNO_2 in 100,000 of water. With this solution of KNO_2, the old starch tests gave an intense blue colour immediately. By way of seeing how much more delicate the starch test is, 100 C.c. of the above solution were diluted with water to a litre = 1 in 1,000,000. In a small test tube, the starch test gave light reddish colour in three minutes, which reached dark red in ten minutes, and shortly became dark blue.

Northampton, November 17, 1896. J. CLOWER.

"THE AIM OF PRELIMINARY EDUCATION."

Sir,—Replying to the question of Mr. C. S. Ashton in your last issue, may I be allowed to say that my authority for rendering Matthew xxiii. 24 in the terms I do is three-fold? First, the fact that all translators and revisers agree as to the reference, namely, the custom of straining wine through linen to be sure of excluding the tiniest insect which may have entered the leathern bottles through insecure fastenings. Secondly, the uniform congruity of all the metaphors of ancient literature; and thirdly, that one version of the English Bible, at least that of 1727, gives "beetle" as a translation of the Greek *καμηλος*, which we render "camel," *i.e.*, a camel fly, so termed from its great size as being about the largest of insects. See also Dean Alford's revision, 1870, "which strain out the gnat and swallow down the camel." And may I add, sir, that I shall be most happy to pursue the subject privately by letter or otherwise with any candid inquirer, but being aware that the pages of the Journal must be devoted mainly to the more self-evident branches of "the art of the pharmacist pure and holy," I am a little disinclined to draw upon your generosity any further in this matter.

39, *Church Street, Marylebone, N.W.* J. C. HYSLOP.
November 22, 1896.

Sir,—If a man knows nothing at all of the hyphen, it is folly to expect him to use it. But the funny thing is that the omission of unnecssary matter from a quotation is not indicated by the hyphen. "Lincolne, Sen.," has invested the wrong man with a haze; and while I would not say that "he knows nothing at all of the hyphen"—he may know, for example, how to make one—I have no hesitation in saying that he does not know all about it. The substance—if any there be—of the second paragraph of his letter, is very hard to get at. In closing, he says the conclusion of the whole matter seems to be that, "while a counsel of perfection is one thing, the practice of it may be quite another." I do not know what a "counsel of perfection" is, and I cannot make out whether your correspondent means the practice of the counsel or the practice of the perfection.

November 21, 1896. MIDLOTHIAN (66/13).

*** It does not appear that any useful purpose can be served by continuing this discussion further on its present lines.—[EDITOR, *Pharm. Journ.*]

"A CURIOUS EXPERIMENT."

Sir,—This experiment is of considerable antiquity. It was revived by some wags in Leadenhall Market in the early days of "X-rays." If T. L. I. will use the handle of his cork press or an iron pestle, he will find his imaginary epiphyses equally well defined; for obvious reasons rectangular solids are less brilliant. Further information, if required, will be found in any elementary text-book on optics or light, under the heading "diffraction."

London, November 21, 1896. LEO. ATKINSON.

A DISPENSING PUZZLE.

Sir,—I think the following is worthy of a place in the columns of the *Pharmaceutical Journal* as an example of "the art of prescribing." Should it be treated as a piece of soap and wrapped up in paper or sent out in a pot as an ointment? —

℞. Zinci Oxyd.	ʒii.
Acid. Carbolic	℥xx.
Glycerin	ʒiii.
Lanolin,	
Zinci oleas aa ad	ʒii.

Ft. ung. Modo dicto utend.

Biarritz, November 23, 1896. DISPENSER (39/66).

PUBLICATIONS RECEIVED.

PROCEEDINGS OF THE NINETEENTH ANNUAL MEETING OF THE KENTUCKY PHARMACEUTICAL ASSOCIATION, held at Estell Springs, Irvine, Ky., June, 1896. Pp. 92. Louisville, Ky.: Bradley and Gilbert Company. 1896.

HOMELY HINTS FOR EVERY HOUSEHOLD. Pp. 45. Price 6*d*. Proctor, Son and Claque, Newcastle-upon-Tyne. 1896.

ON A NEW SPECIES OF GRASS, "BROMUS INTERRUPTUS" IN BRITAIN. By G. CLARIDGE DRUCE, M.A., F.L.S. Reprinted from the Journal of the Linnean Society, Botany, vol. xxxii. 1896.

TWENTY-SEVENTH ANNUAL REPORT OF THE STATE BOARD OF HEALTH OF MASSACHUSETTS, No. 34. Pp. 807. Boston: Wright and Potter Printing Co., State Printers, 18, Post Office Square. 1896.

ANSWERS TO QUERIES.

[*Queries addressed to the "Editorial Department, 17, Bloomsbury Square, W.C.," will be replied to in the Journal as early as possible after receipt, but the Editor cannot undertake to reply to them through the post, nor is it always possible to publish answers the same week. Questions on different subjects should be written on separate slips of paper, each of which should bear the sender's name or initials. Readers requiring working formulæ for special preparations, and intimating their wants to the Editor, will be assisted as far as may by practicable. The word "parts," when used in formulæ, invariably indicates parts by weight. Anonymous queries will be ignored.*]

THEATRICAL SPIRIT GUM.—This is a saturated solution of mastic in methylated spirit. [*Reply to* G. D.—63/35.]

MANUFACTURES OF LIMES.—We are making inquiries, but cannot say at present. There is no book on the subject. [*Reply to* W. P. —65/33.]

APOTHECARIES' HALL EXAMINATIONS.—Apply to Mr. F. Haydon the Secretary, Apothecaries' Hall, Blackfriars, London, S.E. [*Reply to* "FROM THE COUNTRY."—64/14.]

FUMIGATING LIQUID.—It does not appear from the circular you send that the preparation referred to comes within the scope of the Pharmacy Act. [*Reply to* D. W.—65/15.]

SANITARY INSPECTOR.—Reference to the index to the last volume of the Journal would have shown you that all the information you require appeared on page 480 of that volume. [*Reply to* S. P. E.—64/18.]

PARAFFIN MOLLE.—Unless white is specified it should not be used. The preparation ordered in the prescription is a colourless variety of heavy paraffin. Order it from your wholesale house. [*Reply to* "JUNIOR."—64/32.]

EXTRACT OF MALT WITH COD-LIVER OIL.—Put 4 ozs. of rather thin extract of malt in a moderately warm mortar, and gradually stir in 1 oz. of cod-liver oil. If you want it to be creamy, use thicker malt extract, and add the tincture of quillaya as recommended for the malt and hypophosphites. [*Reply to* TRITON.—64/39.]

CHOICE OF LENS FOR CAMERA.—Your former query must have miscarried, as we have no record of it. It is better to use a whole plate lens on a half plate than a half plate lens, because it covers better, but you have the accompanying disadvantages of a longer focus and more scattered light in the camera. [*Reply to* R. F.—64/20.]

BLUE-BLACK TONE.—This may be obtained by using the simple sulphocyanide bath for gelatino-chloride paper, and the acetate bath for albumin. Judging from your letter you are underexposing or not developing long enough. Can you not send a negative or two and prints up? when we could tell you more. The tone of the print is much influenced by the negative. [*Reply to* PHILOMEL. —65/21]

"AQUA COMPOSITA."—We have referred back to the old Pharmacopœias dating as far back as 1580, the date you name, but cannot find that any water is named simply "aqua composita," although numbers of compound waters were used at that date and subsequently. In the old London Pharmacopœias the aquæ compositæ were an important group of medicines. Among those much in use were aqua angelica composita, aqua chamomilla composita, and aqua gentiana composita, to select a few out of many more. [*Reply to* W.H.—63/17.]

AMORPHOUS QUININE SULPHATE.—The sulphate of amorphous quinoidine is somewhat hygroscopic, and readily runs to a resinoid mass on keeping. Its medicinal properties are not altered by this. You can warm it gently on the water bath, cool, and re-powder if you like, but it will soon go solid again. The salt of the amorphous base is not in the B.P., and is not at all comparable with the official crystalline sulphate. It is a totally different thing, both chemically and in therapeutic action. [*Reply to* PIPERAZIN.—63/37.]

PERCENTAGE OF ESERINE.—According to the method of extraction sanctioned by the Paris Pharmaceutical Society (*Ph. J.* [3], viii., 27), 1 kilogramme of Calabar beans yields on an average 1 gramme of eserine, or 0·1 per cent. We have referred to the original papers of Jobst and Hesse and of other workers on the alkaloid, but in no case do we find any statement of the quantity of the alkaloid normally present in the beans. As you state, the point seems to be carefully avoided by the older and more modern authorities. A quantitative examination of this drug is a desideratum. [*Reply to* H. F.—63/43.]

TINCTURE OF DAMIANA.—Do you not mean fluid extract? This is the form in which the drug is generally given. It may be made from Damiana, in No. 20 powder, 20 ounces; proof spirit, *q.s.* Moisten the powdered drug with a few ounces of the spirit, pack in a percolator, and percolate until 18 fluid ounces are obtained: reserve this; continue percolation until the drug is exhausted, distil or evaporate off the spirit from this second percolate, reduce it to two fluid ounces, then mix with the reserved portion; make up exactly to one part with proof spirit. You may make the tincture by dissolving one ounce of this fluid extract in seven fluid ounces of proof spirit, and filtering. [*Reply to* PIPERAZIN.—63/37.]

WARBURG'S TINCTURE.—On the authority of Professor Maclean, the following formula, communicated to him by Dr. Warburg, has been published:—Socotrine aloes, 12 ounces; rhubarb, angelica seeds, confect. Damocrates, of each 4 ounces; elecampane, saffron, fennel, prepared chalk, 2 ounces; gentian root, zedoary root, cubebs, myrrh, camphor, larch boletus, of each 1 ounce. Digest the above in 500 fluid ounces of proof spirit in a water bath for twelve hours, then express and add quinine sulphate 10 ounces. The mixture is replaced on the water bath until all the quinine is dissolved, then cooled and filtered. Another and simpler form of the above is also employed as follows:—Socotrine aloes, 5 troy ounces; zedoary root, 5 troy ounces; camphor, 2 drachms; angelica seeds, 2 drachms; saffron, 3 drachms; quinine sulphate, 3 troy ounces, 288 grains; proof spirit, 9 pints. Macerate seven days, strain, press, and filter. [*Reply to* R. D.—63/13.]

CREAMY EMULSION OF MALT AND HYPOPHOSPHITES.—The peculiar "satiny" appearance of some popular forms of malt and hypophosphites may be obtained by setting very thick malt extract aside until a portion of the maltose crystallises out, and then rubbing in a mortar. A creamy compound may be obtained by rubbing well in a mortar calcium hypophosphite, 100 grains: sodium hypophosphite, 70 grains; potassium hypophosphite, 30 grains; hot distilled water, 1 ounce; glycerin, 1 ounce; tincture of quillaya, B.B.C., 4 drachms; extract of malt, to produce 20 fluid ounces. Mix the glycerin with the hot water and dissolve the hypophosphites in the mixture; add the quillaya to this and incorporate with the malt extracts, stirring until a creamy appearance is obtained. The saponin in the quillaya tincture acts mechanically, causing minute bubbles to appear, which gives the mixture its "creamy" character. [*Reply to* TRITON.—64/39.]

[A number of Replies are held over.]

NEWSPAPERS sent to the Editor should have the paragraphs marked to which it is desired to call attention. Copies have been received during the week of the following:—*Henley and South Oxfordshire Standard, The Oban Tel-graph, The Western Evening Herald, The Western Independent, Lancashire Daily Express and Standard, Liverpool Daily Post, The Oldham Evening Chronicle.*

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Appleby, Ashton, Atkinson, Barclay, Barron, Bevan, Bilson, Bird, Bolton, Booth, Clague, Clarke, Cocks, Conroy, Coull, Cowgill, Critchley, Crook, Currie, Davis, Evans, Forret, George, Grimble, Gwatkin, Hallaway, Higgs, Hill, Hinds, Howie, Hunt, Hyslop, Idris, Keen, Kirkby, Kirkpatrick, Knight, Laing, Macnaught, Maddison, Metcalf, Miller, Minchin, Mumbray, Munday, Nickolls, Perkins, Pilkington, Pretty, Ranken, Robertson, Robinson, Rushworth, Russell, Shepheard, Taylor, Thompson, Tonking, Umrey, Waddington, Walker, Walmsley, Wardleworth, Watt, Welch, White, Whitehead, Will, Wright, Young.

ROYAL COLLEGE OF PHYSICIANS
4 DEC 96

COMPRESSED GASES.*

BY THOMAS MABEN,
Pharmaceutical Chemist.

The honour of opening the evening meetings of the North British Branch for the session has fallen to me through the unfortunate absence of Professor Geddes, who had been expected to discharge the duty. Professor Geddes is a gentleman whose position and qualifications pre-eminently fit him to adorn such an occasion as this, and it is, therefore, no small calamity to you to find his place taken by me. We shall, however, look forward to hearing Professor Geddes some other day, and it will be a gratification to us, and to all his other friends and admirers, to welcome him back re-invigorated by his holiday and his experiences among the Armenians, to that magnificent labour in the cause of humanity with which his name will ever be associated in the history of this grey old metropolis.

It was originally intended that my contribution should have formed part of the programme of the December meeting, but at the request of Mr. Ewing and our Secretary I have stepped into the vacant place. Conscious of being an exceedingly imperfect substitute for Professor Geddes, I am still more conscious that my subject is not of great pharmaceutic interest. For these defects you will I trust pardon me, and I am the more encouraged to hope that you will do this by the reflection that to many of you the manufacture and use of compressed gases is a sealed book, the opening of which may be not uninteresting.

Familiar for many years with the use of compressed oxygen and hydrogen in connection with the limelight, and latterly with compressed carbon dioxide in the manufacture of aërated waters, it was only quite recently that I had the pleasure of inspecting the processes of compression. When I was asked to contribute a paper this session I recalled my visit to the works of the Scottish and Irish Oxygen Company in Glasgow some time before, and the idea was suggested that a description of these processes would be useful to many of our craft, all of whom have an intimate theoretic, if not practical, acquaintance with the gases of which I propose to treat.

The compression of gases is a practical illustration on a commercial scale of Boyle's law, viz., that the volume of a gas is inversely as the pressure. Assuming 15 lbs. to the square inch to be normal pressure, a pressure of 30 lbs. will reduce a gas to one-half, 150 lbs. to one-tenth, and 1500 lbs. to one-hundredth of its normal volume. It is the application of this law that is the foundation of the compressed gas industry, an industry that is rapidly developing, and that bids fair to play a much more important part in many directions than it has hitherto done.

It will tend to convenience if I range my observations under several heads, and I propose to treat of the production of oxygen on a commercial scale, the process of compression, the storage of compressed gas, and the testing of cylinders, which are common to all gases, the production of other gases and their utility, this section being mainly devoted to the discussion of the value of compressed CO_2 in making aërated waters, and, lastly, I shall give a practical demonstration of the production of acetylene, and show its value as an illuminant.

Oxygen.—Commencing with the gas which is most familiar, and which is also the gas of greatest scientific interest, I shall give a brief account of the production of oxygen on the commercial scale. It is hardly needful that I should refer at length to the methods by which oxygen has been and may be produced; these are very numerous, and only a brief summary at most is required. Since the effect is that the oxide is very soon degraded to carbonate, which year 1849 considerably over fifty patents have been taken out for the production of oxygen for use in the arts, though, of course, many of these are simply modifications of some other process. The most interesting method from a historical point of view is that by which Priestley first obtained oxygen in 1774, namely, by the ignition of potassic nitrate with the formation of potassic nitrite and liberation of the gas. The first patent, granted in 1849, was based on this process, and the second depended on the electrolysis of saline nitrates and sulphates. The third patent, taken out in 1852, was the result of the remarkable discovery in 1851 by Boussingault, that at certain temperatures barium oxide absorbed oxygen and formed peroxide, and at an increase of temperature the peroxide gave up its oxygen, again becoming monoxide. In 1853 manganese dioxide was the subject of a patent, and in 1866 the alternate formation and decomposition of alkaline manganates was expected to yield great results. This latter process has quite recently been revived in America, a notice of a modification of it having appeared in the English papers no later than three weeks ago. It is curious to observe that the process by which oxygen has been prepared for many years for laboratory purposes, namely, by heating potassium chlorate, has not been, so far as I can discover, the subject of a patent.

The process which is at the present time of greatest interest to us is that which goes by the name of Brin's process. This consists essentially in the abstraction of oxygen from the atmosphere by means of the peroxidation of barium oxide and subsequent deoxidation of the peroxide. MM. Brin took out their first patent in 1880, and followed it by others in 1884, 1885, and 1888, so that this method in its perfected state is quite modern. In the year 1886 Brin's Oxygen Company erected a large oxygen plant in London, and shortly thereafter subsidiary companies were formed to produce oxygen at Birmingham, Manchester, and Glasgow. All these companies supply oxygen in the compressed form, but a large number or gasworks throughout the country have put down oxygen plant for the production of the gas for their own use in the revivification of spent oxide of iron.

Barium oxide of the quality best suited for the purpose is obtained by heating the nitrate in fire-clay crucibles in a coke fire to a temperature of about 880° C. The nitrate fuses, and decomposition takes place, oxygen and the oxides of nitrogen being evolved. Owing to the violent ebullition in the crucibles, a porous mass, not unlike pumice stone, is left, this being again ignited to complete the decomposition. The more porous and the harder the oxide is the better is it suited for the purpose, and it requires to be specially prepared, and with great care, to give the requisite qualities.

In the early years of the barium processes the first attempts all failed, and much money was sunk to no purpose in large experimental works. The cause of failure was the deterioration of the oxide by the gradual loss of its power of re-oxidation after repeated oxidations and deoxidations. In making his experiments, Boussingault purified the air very thoroughly, but notwithstanding this, indeed as it now appears, in consequence of this, the barium oxide gradually lost its absorptive power for oxygen. He found, however, that by passing steam through the spent oxide he restored this power, but this had a disintegrating, and therefore a deleterious effect. It is found impossible, working on the large scale, to render the air perfectly dry, and it is now believed that the trace of moisture left in the air aids in keeping the surface of the oxide in a good condition without being sufficient to cause disintegration. The other ingredient in the atmosphere which has an adverse influence on the oxide is the carbonic dioxide. If this is not completely removed, or if, through imperfect joints, impurified air is admitted to the retorts, the

* Read at an Evening Meeting of the Pharmaceutical Society at Edinburgh, November 27, 1896.

gradually settles down as a powder in the retorts. Before being admitted to the retorts, therefore, the air is purified by being passed through a drying chamber of quicklime, and a second containing lumps of caustic soda, the object of the latter being simply to catch any residuum of CO_2 unabsorbed by the quicklime. After being purified the air is passed into a series of retorts filled with the barium oxide and kept heated to a constant temperature. In the first plant erected at Westminster, and also at Glasgow, the retorts were laid horizontally, but this was soon found unsuitable, owing to the subsidence of the disintegrated oxide leaving channels through which the air passed without being acted on. The form now adopted is the vertical retort, made rather narrower at the bottom than the top.

The next improvement consisted in making the process perfectly continuous. At first the baryta in the retorts was heated to a dull red heat about 600°, and the air passed over it at a pressure of about 10 lbs. to the square inch. When oxidation was complete the pumps were stopped and the temperature of the retorts was raised to a full red heat about 850°, and these were then connected with the vacuum pumps. The absorbed oxygen being disengaged at the higher temperature was passed by the pumps into the gas-holder. An intermittent process was thus obtained, but owing to the great loss of time involved in the alternate heating and partial cooling of the retorts, it was found that the cost of oxygen was much too high for its application to industrial purposes. This difficulty has now been perfectly solved by a very simple expedient, namely, the adoption of a variable pressure in place of a variable temperature. It is found that by maintaining the temperature at about 700°, considerable peroxidation takes place under a pressure of 10 lbs. per square inch above atmospheric, and deoxidation when the air current is stopped, and the pressure reduced to about 13 to 14 lbs. below atmospheric. When the two temperatures were employed, about one-half the theoretical yield was obtained at each operation, namely, about ·6 cubic foot per one pound of baryta, the time required being about four hours. Under the continuous process the yield is only about ·1 cubic foot per operation, but the time required is reduced to fifteen minutes. By the latter process, therefore, three times the yield of oxygen can be obtained, greater economy is effected in fuel and wear and tear, and much less expensive labour is required. An automatic arrangement controls the time of each operation and reverses pumps and cocks, and thus guarantees perfect working without much attention being necessary.

The cycle of operations may be thus summarised. The air is drawn by the pump through the purifiers and passed into the retorts under the required pressure. The pressure is regulated by the release valve at the top of the apparatus which opens and sets free the nitrogen when the pressure is too high. When the operation has been continued for seven and a half minutes the action is reversed and the pumps exhaust the retorts, the release valve being closed by the suction and all communication with the outer air being cut off. Pure oxygen not being obtained until a vacuum of twenty-six inches of mercury has been created in the retorts, the first gas drawn is blown off, and this contains the nitrogen. So soon as all the nitrogen is removed and the vacuum is obtained the automatic arrangement closes the blow-off cock, and the oxygen is then passed into the gas-holder.

Oxygen thus obtained is very pure, though not absolutely pure. In practice the highest quality obtained is 98 per cent., and at the Glasgow works it ranges from 94 to 98 per cent. Its strength is ascertained after every operation, and if it fails to show a given standard it cannot be sent out. The principal cause of failure is found in imperfect joints, admitting air into the pipes while the oxidation process is proceeding. The exhaustion of the retorts and the pipes is sufficiently strong to cause even a very small leak to make its influence materially felt. This possibility of leakage is the main difficulty to be contended with in the process, for it has the double effect of weakening the percentage of oxygen and also of bringing about deterioration of the baryta. With perfectly secure joints the barium oxide lasts a very long time. In the case of the Glasgow plant, the sixteen retorts take a charge of fully 1½ tons of oxide—about 2 cwt. in each—and if everything be in order and no leakage take place the furnace runs from twelve to eighteen months without any change, and at the end of that time not more, perhaps, than three or four pounds of fresh oxide require to be added to each retort. On the other hand, if there be leakage, the oxide has to be renewed more frequently.

The process of compression is a very simple one. The compressor consists of three vertical pumps or cylinders, through each of which the gas passes in turn. Entering the first cylinder from the holder, the gas is there compressed to eight atmospheres, from there it is passed through an intermediate chamber into the second cylinder, where it is compressed to thirty-two atmospheres, and lastly into the third cylinder, where it may be compressed to one hundred and twenty-five atmospheres, this latter pressure being found necessary in order that the gas may, when cool, show a pressure of one hundred and twenty atmospheres. This pressure applies to oxygen and hydrogen, but not to carbonic dioxide, which is never compressed beyond fifty-five atmospheres, the reason for this being that increase of temperature produces such a rapid effect on liquid CO that the pressure might rise to over 4000 lbs. per square inch, and such a pressure would be dangerous. Each compressor is fitted with a safety-valve which blows off at one hundred and thirty atmospheres, so that there can never be any chance of the cylinders being charged to too high a pressure.

The storage cylinders are made of steel, and may either be solid-drawn or lap-welded. They can be had of all sizes, from those containing five cubic feet of gas to those containing five hundred cubic feet. There is a very general impression that cylinders of compressed gas are exceedingly dangerous to handle, but this is not the case. It is true that some accidents have happened, but these have been mostly due to preventable causes, and extremely few to faulty cylinders. Subsequently to the last explosion, at Fenchurch Street Station, London, in 1895, a Select Committee was appointed to consider the question of the causes and means for prevention of explosions of compressed gas cylinders. Their report, which is of a very elaborate character, has just been issued, and from it much information on the storage of gases and the testing of cylinders may be derived.

The accidents that have happened have been traced to various causes. In three cases the explosions were due to mixed gases; in other three, two on the Continent, and one on board ship, to excessive pressure, due to overcharging, in each case CO_2 being the gas; one to ignition of oil, one explosion of hydrogen cylinders for balloon purposes at Antwerp last year, for which no specific cause could be assigned, and four explosions "probably due to bad cylinders." Considering that the parent Brin's Company alone sent out 100,000 cylinders in 1894, and one of the CO_2 companies 75,000 cylinders in the same year, it is obvious that the trade is already an enormous one, and relatively speaking the accidents have been extremely few.

The accidents that arose from a mixture of gases such as coal gas and oxygen, or hydrogen and oxygen, cannot possibly again occur, for in the case of oxygen the screw of the cylinder fittings turns in one direction, while in hydrogen cylinders it turns in the other, and it is, therefore, impossible to fill

a hydrogen cylinder from an oxygen compressor, and *vice versâ*. The accident at Bradford in 1893 was supposed to be due to an imperfectly annealed and brittle cylinder, and immediately thereafter the compressing companies decided to use no more cylinders of this particular make, with the result that in the Glasgow works alone cylinders to the value of £2500 were laid aside as of no use whatever. When new cylinders are taken into stock they are annealed in muffle furnaces at the compressing factories and tested by pressure before being used. The annealing and testing are repeated every four years, and cylinders that fail to stand the test are at once thrown aside. The stretch test, applied to ascertain the elastic limit of the metal, is the most important.

The cylinder to be tested is filled with water and placed in an iron casing or envelope, also full of water. A flexible rubber-joint ring is placed round the shoulder of the cylinder, and this being inflated with water pressure a perfect joint is formed in such a manner that all communication between the casing and the atmosphere is closed, with the exception of an outlet through a small-bore tube, through which the water rises to the indicator on any displacement caused by the stretch of the cylinder. After the cylinder has been placed in the casing and all joints have been made, the water level in the gauge-glass is taken. Pressure is then put slowly into the cylinder by the hydraulic pump, and elasticity is in every case shown from the moment the first indications of pressure are given on the pressure gauge.

The water in the indicator rises with every stroke of the pump until the desired maximum is reached. Where an accumulator is part of the equipment, as in the Glasgow works, the water can be maintained at the high level indefinitely, but the moment the pressure is released the water falls, and in the case of good cylinders it returns to its original position, thus showing that the elastic limit of the metal has not been passed. Where the displacement is permanent, that is, when the water remains stationary in the indicator after the pressure is released, the cylinder is rejected, but small variations from the original water level, which are not increased on repeated applications of the test, are not considered as due to stretch of metal but to the fact of the cylinders in the first instance not being of such perfect form as they should be. All new cylinders are tested to 4000 lbs. per square inch, and care is taken not to test beyond this pressure, which is considered a safe and sufficient test for cylinders of the quality of steel employed.

Cylinders have also been subjected when filled with gas at a high pressure to many very severe tests, such as throwing them from a height to the pavement, dropping an iron weight of 6¼ cwt. from a height of thirty-five feet on the cylinders, the blow giving an impact of fifteen tons, bending cylinders, and so on, with the result that in no case was the cylinder ruptured or destroyed, but only bent.

From the consideration of all these facts it may be concluded that where due care is taken by the manufacturers and compressors there need never be the slightest fear of an explosion.

Where much work has to be done with compressed gas it is desirable to have a gauge to ascertain the quantity of gas in a cylinder at any given time. In the case of carbonic dioxide the best plan is to weigh the cylinder accurately and deduct the tare which is marked in plain figures, giving the number of pounds on the lip of the cylinder. One pound of carbonic dioxide will measure approximately 8½ cubic feet at the normal pressure and temperature. Regulators are also necessary to prevent too great a rush of gas when the cylinder is opened, and to keep the pressure constant. The principle on which all the regulators are constructed is a bellows arrangement which automatically stops the outflow of gas when the pressure is too great. Such regulators are especially necessary in aërated waterworks, as with them the gas-holder is always kept at a constant level, and no attention is required till the empty cylinder has to be replaced by one fully charged.

The principal uses to which compressed oxygen is being applied are the limelight, certain soldering operations for which, with compressed coal gas, it is very effective, the oxidation of oils, and, latterly, within the last few years, it has come to be regarded as a remedial agent of great value. Now that the gas can be obtained in a pure condition, and thus perfectly safe, it may be used, and is largely used, by inhalation in cases of asphyxia and in affections of the lungs, bronchial organs, and heart. The gas can be obtained in cylinders of any size, and there is no reason why pharmacists should not always have a supply on hand. Quite recently the value of the gas in cases of asphyxia in coal mines has been strikingly illustrated, and only the other day an arrangement, devised by Mr. Reynolds, Leeds, for the more convenient carriage of cylinders was figured in the *Pharmaceutical Journal*. Cases of asphyxia are exceedingly common, and every hospital ought to be possessed of a supply of compressed oxygen. Most of the large hospitals in this country keep it, but, so far, we are a long way behind France, for in Paris, not only the hospitals, but the fire brigade and police stations are always ready to cope with any emergency.

(*To be continued.*)

PALMS AND THEIR PRODUCTS.*

BY JOHN R. JACKSON, A.L.S.

Keeper of the Museums in the Royal Gardens, Kew.

Though the natural order Palmaceæ is one of the most important among the Monocotyledons from an economic point of view, it is remarkably destitute of any marked medicinal properties, and though Pereira in his 'Materia Medica' says "Palms considered in a dietetical and medicinal point of view are of the highest importance to the inhabitants of tropical regions," the principal products referred to by him are sugar and starch—the produce of the two sago-producing palms, *Metroxylon sagu* and *Arenga saccharifera*. Besides these, the only palms included in Pereira's great work are the African oil palm (*Elaes guineensis*), the coco-nut (*Cocos nucifera*), the Brazilian wax palm (*Copernicia cerifera*), the dragon's blood (*Calamus draco*), and the betel nut or areca palm (*Areca catechu*), while Bentley and Trimen, in their 'Medicinal Plants recognise only *Areca catechu*, *Arenga saccharifera*, and *Metroxylon sagu*. It is, therefore, on account of the general interest attached to palms, particularly at the present time, as distinct from any pharmaceutical interest, that the subject is now referred to.

Palms are essentially tropical plants, one European species only being known, namely, the South European fern palm (*Chamaerops humilis*). Characteristic of the plants constituting the order are the cylindrical or columnar stems, often growing to a great height and surmounted with a crown of feathery foliage. Exceptions to this rule occur in the case of branching palms, the oldest and best known example being the gingerbread or doum palm of Egypt (*Hyphaene thebaica*), and many other palms belonging to different genera have been discovered in recent times having a more complete branching habit than the doum. Allusion may also be made to the slender climbing stems of the species of *Calamus*, which abounds in the dense jungles of the East, some of which form stems two or three inches in diameter while the smallest, such as *Calamus gracilis*, are no thicker than whip-cord. These stems often travel long distances among the branches of tall trees, one example in the Kew Museum being nearly 400 feet long, or nearly the height of the dome of St. Paul's Cathedral. It is from the imbricated scales of the fruits of species

* Notes of an address to the Chemists' Assistants' Association.

of this group that the red resin known as dragon's blood is procured, by shaking the fruits in a sieve or sack and then moulding the powdered resin into lumps by heat.

Enormous quantities of sago are yielded by a single tree of *Metroxylon sagu*, averaging in a good tree as much as 500 lbs. to 600 lbs., and even, sometimes, it is said up to 800 lbs. With regard to the nutritious quantity of sago meal, one pound of cake made from the meal is a sufficient daily diet for a man in the Moluccas, engaged in hard bodily work.

Toddy or palm wine, and sugar are amongst the most important products of palms, the principal of which is the Palmyra palm of Ceylon and Southern India (*Borassus flabellifer*), *Caryota urens*, also an Indian species, and *Arenga saccharifera*, of the Malay Archipelago, are also important sources of this well-known beverage. In all these palms the vinous fluid is drawn from the young unexpanded spathe, but in some instances a similar intoxicating drink is procured from the stem of the tree, as in *Mauritia vinifera*, known as the wine palm of Para. While from the Chilian honey palm (*Jubæa spectabilis*) the stem when wounded yields a thick honey-like substance to the extent, it is said, of some ninety gallons of juice from a single trunk, which is boiled to form the honey. This tree has become well known of late in this country in consequence of the small, hard marble-like fruits having appeared in our shops under the name of little coco-nuts, in consequence of the kernel being edible and tasting like coco-nut. When boiled and evaporated the juice of the toddy-yielding palms just alluded to yield large quantities of sugar

Oils and waxes are also important products of palms, the African oil palm (*Elaeis guineensis*) and the coco-nut being the chief sources of the former, and the Brazilian wax palm (*Copernicia cerifera*) and the wax palm of the Andes (*Ceroxylon andicola*) the principal sources of the latter. In the *Copernicia* the wax is deposited in the form of a scale on the leaves, which is scraped off and melted into cakes, while in the *Ceroxylon* it is found encrusting the trunk with a greyish coating, which can readily be removed by the finger-nail. Both of these waxes are used for making candles. In the matter of fibres palms are very rich. Most of this fibre is found deposited around the bases of the leaf-stalks, and the best and most important of all, from a commercial point of view, is that known as bass or piassaba, which is so largely used for street brooms. This is furnished by *Leopoldinia piassaba*, and is known as Para bass, and by *Attalea funifera*, or Bahia bass. Enormous quantities of these fibres are used for brush making, after being steeped in hot water or steamed to make them supple, or to prevent them breaking. So great has been the demand for these fibres that of late years a good deal of attention has been paid to the subject of substitutes, with the result that a Madagascar palm has been found to produce a similar substance, and more recently the petioles of the wine palm of tropical Africa (*Raphia vinifera*) have been laid under contribution, and the long coarse fibres of which these petioles are for the most part composed have been extracted and largely used under the name of Lagos bass. Still more recently has another bass been introduced, and this is procured from the Palmyra palm (*Borassus flabellifer*) of Ceylon and Southern India.

Ichthyol in Tuberculosis.—In the earlier stages of phthisis, when the pulmonary lesions are limited to the apex, Cohn (*Deutsche Medinisch. Wochensch.*) has found ichthyol internally to be of marked benefit. It is, however, useless in advanced cases with large cavities. It is given in 50 per cent. aqueous solution, commencing with 2 drops and gradually increasing up to 50, freely diluted with water, three times daily, fasting. In laryngeal phthisis inhalations of ichthyol may be combined with the internal use of the drug.—*Rev. de Thérap.*, lxiii., 596.

PHARMACEUTICAL SOCIETY

MEETING OF THE COUNCIL.

WEDNESDAY, DECEMBER 2, 1896.

Present:

Mr. W. Hills, President.
Mr. J. Harrison, Vice-President.

Messrs. Allen, Atkins, Bateson, Bottle, Carteighe, Corder, Cross, Gostling, Grose, Hampson, Martindale, Park, Savory, Southall, Storrar, Symes, and Young.

The minutes of the previous meeting were read and confirmed.

The President read a letter which he had received from Mrs. Langdon Down thanking the Council for the letter of sympathy sent last month on the death of Dr. Langdon Down.

The Salters Research Fellowship.

The President said he had now to report the formal appointment by the Salters Company of Mr. Thomas Tickle to the Salters Research Fellowship, to which he referred last month. Mr. Tickle, on account of an engagement which he then held, was unable to commence work at once, but he was pleased to say that he had now done so. He had already, as they knew, been connected with the Research Laboratory.

Decease of Divisional Secretaries.

The President said he had to report the death since the last meeting of two of the Divisional Secretaries, viz., Mr. H. A. Thomas, Divisional Secretary for the Parliamentary Division of the City, and Mr. Gulliver, who up till quite recently was Divisional Secretary for St. George's, Hanover Square. Probably both of these gentlemen were personally known to the Council. In the death of Mr. Thomas they had lost the services of a man in the prime of life, from whom they expected much in the future, and who was greatly beloved on all sides. They had also great respect for Mr. Gulliver, and were grateful for what he had done in the past. He had also to report the death of Mr. John Goodman, Clapton, who was a generous supporter of the Benevolent Fund.

Election.

Student.

Edward Thomas Abel, having passed the First examination and tendered his subscription for the current year, be elected a "Student" of the Society.

Additions to the Register.

The Registrar reported that:—

William George McCall, 4, Leopold Place, Edinburgh,
Robert Webster Wilson, 2, Sedlaw Grove, Leeds,

having made Declarations that they were in business before the passing of the Pharmacy Act, 1868, and these Declarations having been duly supported, their names had been placed on the Register.

Appointment of Boards of Examiners.

The President moved the appointment of the following gentlemen to act as Examiners in England and Wales for the ensuing year, the names having been very carefully selected by the whole of the Council sitting in Committee:—

Arkinstall, William, London.
Bascombe, Frederick, London.
Frankland, Percy (Chemistry), Birmingham.
Green, J. Reynolds (Botany), Cambridge.
Holmes, Walter Murton, London.
Lucas, Edward William, London.
McLeod, Herbert (Chemistry), Staines.

Seward, Albert Charles (Botany), Cambridge.
Taylor, George Spratt, London.
Tanner, Alfred Edward, London.
White, Edmund, London.
Wright, Robert, Buxton.

The VICE-PRESIDENT seconded the resolution, which was unanimously agreed to.

The PRESIDENT then moved the appointment of the following gentlemen as Examiners in Scotland for the ensuing year, on the recommendation of the Executive of the North British Branch :—

Balfour, Isaac Bayley (Botany), Edinburgh.
Davidson, Alexander, Montrose.
Ewing, Jas. Laidlaw, Edinburgh.
Fraser, Jonathan Innes, Edinburgh.
Gibson, John (Chemistry), Edinburgh.
Mabon, Thomas, Hawick.
Nesbit, John, Portobello.
Sutherland, John Wm., Dumfries.

This resolution was also seconded by the VICE-PRESIDENT, and unanimously agreed to.

APPOINTMENT OF SUPERINTENDENTS AND DEPUTY-SUPERINTENDENTS.

The following were unanimously appointed superintendents and deputy-superintendents of written examinations for the ensuing year.

CENTRE.	Superintendent.	Deputy.
Aberdeen	Strachan, Alexander	Clark, James.
Birmingham	Thompson, Charles	Prosser, Frank H.
Brighton	Gwatkin, James Ross.	Savage, William W.
Bristol	Keen, Benjamin.	Allen, Benjamin.
Cambridge	Deck, Arthur	King, George.
Canterbury	Bing, Edwin	Amos, Daniel.
Cardiff	Munday, John	Coleman, Alfred.
Carlisle	Hallaway, John	Pattinson, Michael H.
Carmarthen	Lloyd, Walter	James, Joshua.
Carnarvon	Jones, John	Jones, David.
Cheltenham	Barron, William	Palmer, Frank Thomas.
Darlington	Robinson, James	Hutchinson, Rev. E.
Douglas, I. of Man.	Radcliffe, John Collister	Young, John.
Dundee	Hardie, James	Hardie, James Miller.
Edinburgh	Stephenson, John B.	Henry, Claude F.
Exeter	Lake, John Hinton	Milton, Thomas Clement
Glasgow	Currie, William Little	Moir, James.
Guernsey	Nickolls, John Bate	De la Rue, Frank H.
Hull	Bell, Charles Bains	Stoakes, Benjamin M.
Inverness	Allan, Alexander.	MacRitchie, David
Jersey	Cole, George	Baker, John Thomas.
Kirkwall (Orkney).	Stewart, Duncan	Webster, Rev. David.
Lancaster	Vince, James	Arkle, William.
Leeds	Reynolds, Richard.	Branson, Fredk. W.
Lincoln	Birkbeck, John Thomas.	Elmitt, George.
Liverpool	Smith, John.	Buck, Anthony S.
London	Taylor, George Spratt	Allen, Charles Bowen. / Moon, Harry.
Manchester	Kemp, Harry	Swinn, Charles.
Newcastle-on-Tyne	Clague, Thos. M.	Owen, Alfred Ernest.
Northampton	Bingley, John	Mayger, William David.
Norwich	Sutton, Francis	Corder, Octavius.
Nottingham	Bolton, Charles A.	Wilford, John.
Oxford	Prior, George Thomas	Thurland, Henry.
Penzance	Symons, Netherton H.	Buckett, Alfred Henry
Peterborough	Heanley, Marshall	Saunders, James Edwin
Plymouth	Hunt, Freeman, W.	Woods, Wm. Herbert.
Sheffield	Ward, William	Morrison, Charles Orr.
Shrewsbury	Cross, William Gowen	Blunt, Thomas Porter.
Southampton	Dawson, Oliver Robert	Spearing, James.
York	Sowray, Joseph	Kendall, Edward B.

FINANCE COMMITTEE.

The SECRETARY read the report of this Committee, which included a recommendation of the payment of sundry accounts.

The PRESIDENT (as Chairman of the Committee) moved the adoption of the report and recommendations. He said there was nothing calling for special remark, but he was glad to call attention to a donation of ten guineas to the Benevolent Fund from their old friend Mr. Edward Burden (making his total gifts to the Fund up to fifty guineas), accompanied by a very kind letter, expressing his admiration of the splendid way in which the Fund is administered.

BENEVOLENT FUND.

The report of this Committee included a recommendation of grants to the amount of £25 in the following cases :—

A Chemist and Druggist member, and subscriber to the Fund, and for some years a Local Secretary. He had recently to give up business from ill-health, and is at present out of employment. (Manor Park.)

The widow of a registered Chemist and Druggist, who has had eleven previous grants, and is solely dependent on a married daughter, who can provide he with food and shelter only. (Forest Gate.)

The widow of a former Pharmaceutical Chemist member, who died in July last, leaving four children under nine years of age. (Ponders End.)

A registered Chemist and Druggist member. Since 1880 he has been acting as assistant, but is now out of employment. Has ten children, five of whom are dependent upon him. (Camberwell.)

One other case was deferred for further information.

The Secretary had reported the death, on November 15, of Alfred Kent, Ramsgate, aged 79, an annuitant.

The VICE-PRESIDENT, in moving the adoption of the report, said he was glad to report that the number of cases was smaller than on the former occasion, when the list was at normal length. Two of the cases were men who were not very far advanced in life; they were in distressed circumstances, but were competent to work if they could get it. The help which the Fund was giving would enable them to find work, and he hoped they would have no difficulty in obtaining it. The only other case he would refer to was that of a lady of thirty-one years of age, who became a widow under very painful circumstances. With reference to this lady he should like to say that an effort was being made to get one of her daughters into the London Orphan Asylum, and if any of the members had any influence in obtaining votes for this child they would be doing a really good work in lending their aid. At the last Council meeting he had taken the very dangerous course of attempting to give a forecast as to their future position; but he was sorry to say that the money had not come in as they hoped it would, and their expenditure last month was very large. It was found that by the end of the year the balance in hand would be something like £306 to begin the new year with, but on January 1 they would have to pay annuities amounting to £561, so that they would be some £250 to the bad. They were approaching a time of the year when people spoke of goodwill and so on, and if there should be any of their members who felt a difficulty in disposing of their cash the Council would be happy to take charge of it and dispose of it in the best possible way.

Mr. ATKINS, in seconding the report, wished to call attention to a letter he had received that morning from his son, a local secretary, enclosing a letter from the niece of an annuitant, who died on Monday last. He thought this case was typical of the good work of the Benevolent Fund. The annuitant's husband had been connected with the Society from 1842 to 1880, and was greatly beloved and respected in his neighbourhood. This gentleman had succeeded in laying by a competent fortune for himself and his wife, but he had the misfortune to lose it all in the Overend and Gurney failure in 1866. He (Mr. Atkins) spoke in terms of high appreciation of the late annuitant, saying that he had never heard a warmer testimony of gratitude to the Society than when she told him that but for the Fund she must have been stranded, with nothing before her but the workhouse. If only their friends throughout the country could realise how much good was done by the Fund in a case like this, which was only a type of many other cases, the very warmest support would be given to it.

Mr. SYMES suggested that the name of the child seeking election to the London Orphan Asylum should be mentioned in order that members might know whom to vote for. The name was Elizabeth Kirkby.

The PRESIDENT, in putting the resolution, said he regretted that many more of their friends did not see their way to subscribe, if only a small amount, to the Fund during their lifetime. He had

in his mind two cases in which, if the deceased father had been a subscriber for three years, there would have been no difficulty in one of the children benefiting by the Orphan Fund, and he hoped this would be borne in mind. They had now the nucleus, at any rate, of a grand Orphan Fund, and if an eligible case came forward another election could be made at once. The resolution was then adopted unanimously.

Library, Museum, School, and House Committee.

Library.

The report of the Librarian had been received, including the following particulars:—

	Attendance.	Total.	Highest.	Lowest.	Average.
October	Day.....	397	24	3	15
	Evening	122	13	2	6

Circulation of Books.	Total.	Town.	Country.	Carriage paid.
October	209	120	89	£1 1s. 10½d.

Donations to the Library had been announced (*Pharm. Journ.*, November 14, p. 430), and the Committee had directed that the usual letters of thanks be sent to the respective donors.

The Committee had recommended that the undermentioned ooks be purchased:—

For the Library in London:—

Lee, Microtomist's Vade Mecum, 4th ed., 1896.
Van 't Hoff, Studies in Chemical Dynamics, 1896.
Ramsay, The Gases of the Atmosphere, 1896.

For the Library in Edinburgh:—

Sutton, Volumetric Analysis, 7th ed., 1896.
Lassar-Cohn, Chemistry in Daily Life, 1896.
Gattermann, Practical Methods of Organic Chemistry, 1896.

Museum.

The Curator's report had been received, and included the following particulars:—

	Attendance.	Total.	Highest.	Lowest.	Average.
October	Day.....	407	25	4	15
	Evening	33	7	1	1

Several donations had been received (*Pharm. Journ.*, November 14, p. 430), and the Committee had directed that the usual letters of thanks be sent to the respective donors.

The Curator had presented a report on the meeting of the Museums Association at Glasgow.

Mr. Carteighe had submitted the following draft regulations for the Burroughs Scholarship; which were approved by the Committee, and recommended to the Council for adoption.

The Burroughs Scholarship.

The Burroughs Scholarship is offered annually in July to Pharmaceutical Chemists who are desirous of obtaining advanced instruction in chemistry and pharmacy, with a view to conducting original investigations in these subjects.

The scholar receives the sum of £26, and is provided, free of cost, with a working bench, apparatus, and materials in the Research Laboratory. He is required to work under the supervision of the Professor of Chemistry, and to observe the rules and regulations of the Laboratory. The nomination of the scholar is made by the School Committee after ascertaining the candidate's fitness by means of an examination in chemistry and pharmacy, or in such other manner as the Committee may think fit. The nomination of the Committee is submitted for the approval of the Council, who elects the scholar.

Applications for the Burroughs Scholarship must be sent to the Secretary of the Pharmaceutical Society not later than July 25 in each year.

The Committee recommended the purchase of six microscopes for the use of the Board of Examiners.

Mr. Frank Giles, who gained the silver medal in the late Herbarium Competition, having offered the collection to the Society, the President was requested to thank him for the gift.

The President in moving the adoption of the report and recommendations, drew special attention to the regulations for the Burroughs Scholarship, which were framed on the lines of the Redwood Scholarship. When their unknown friends with superfluous cash, to whom the Vice-President had referred, had made up the little deficit on the Benevolent Fund, if they chose in a liberal moment to provide funds for another scholarship in the Research Laboratory, he was sure the Council would be very pleased to accept it. He would also draw attention to the gift by Mr. Frank Giles of the beautiful herbarium which won the first prize at the recent competition, for which he had already written to thank him. The collection would be quite an addition to the Museum, and was well worth inspection.

Mr. Park wished, on behalf of the Local Association at Plymouth, to ask the Committee to tender its sincere thanks to Mr. Butt for his kind gift of books, which came at a very opportune moment, just as the Association had moved into new quarters, and when it had received the gift of a book-case, which these volumes would help to fill. Mr. Butt was formerly connected with Plymouth for a short time, and the Local Committee and students were very grateful to him for thinking of them. They, therefore, desired the Library Committee, through whom the donation was made, to convey their thanks to Mr. Butt.

The President said the Committee at its next meeting would be very pleased to do as Mr. Park had requested.

The report and recommendations were then unanimously adopted.

Mr. Bottle inquired if the Research scholars worked under the direction of the Superintendent of the Laboratory or on their own initiative.

The President said they worked entirely under the direction of the Superintendent.

Local Secretary for Lowestoft.

On the motion of the President, Mr. A. H. Hinde was appointed Local Secretary for Lowestoft.

Divisional Secretary.

The President then moved that Mr. S. A. Sturton, of Goldhawk Road, W., be appointed Divisional Secretary for the Parliamentary borough of Hammersmith. Mr. Sturton was an old student and a loyal member of the Society.

The motion was unanimously agreed to.

The Boards of Examiners.

On the motion of the President, a vote of thanks was passed to the Boards of Examiners for their services during the past year.

Mr. Storrar asked if there should not be some special reference to the retiring examiners. They were indebted to Professor Geddes for the kindly and careful manner in which he had carried out his work; the Board in Edinburgh had worked more harmoniously under him than it had ever done before. They were also in like manner indebted to Professor Gibson.

Mr. Carteighe said he had had several opportunities of being associated with Professor Geddes in his official work, and could testify to his love for young people and his general good nature. He certainly was an extremely remarkable man, and one of the best oral examiners he had ever seen, as far as fluency and patience were concerned. There were sometimes differences of opinion as to how far good nature should go, and perhaps if Professor Geddes had a failing it was in favour of the candidate. He did not know that they need pass a formal resolution on his retirement, because it was possible that he might be asked to serve again on a future occasion. The Board certainly appreciated his services very much, and he wished to endorse what Mr. Storrar had said as to the care he took in the examinations.

The President did not think it advisable to pass any special vote of thanks, but he was glad Mr. Storrar had called attention to Professor Geddes' retirement. Since becoming President he had had the pleasure of paying one visit to the Board of Examiners in Edinburgh and could corroborate all that had been said with regard to his kindly disposition, and the great services which he had rendered to the Board of Examiners in the North.

Appointment of Local Secretaries.

Mr. Cross then moved:—

"That having regard to the large number of centres from which no returns were received at the recent election of local secretaries, this Council instructs the General Purposes Committee to investigate the circumstances attending that election, and also to consider and report generally upon the duties and position of local secretaries, with a view, if possible, to strengthen the position of the Society throughout the country."

He said, in moving his motion, he did not wish to pose as an alarmist or a pessimist in any way whatever. The occasion which led to his putting the notice on the paper would be fresh in the minds of the Council. When the Secretary gave his Report of the Election of Local Secretaries last month, the astounding fact was divulged that forty-six centres in England, sixteen in Scotland, and seven in Wales, had made no nomination at all. This was very disappointing to the Council, because they knew that recently such an alteration had been made in the election of local secretaries as to make it less a perfunctory matter. The Secretary had in recent years sent to all the newly-elected secretaries throughout the country a plain epitome of the functions they was expected to perform. He took the matter rather to himself, but having made inquiry into the matter he did not find it was quite so bad as it appeared on the first blush, because out of the forty-six centres in England that had made no nomination no less than ten had only one member who was qualified to be a local secretary. They could readily imagine that that one man residing by himself would be far too modest to nominate himself. He also found that in eighteen other centres there were only two members who were competent to serve. In that case they could imagine that there would be a difficulty in those two gentlemen deciding which was the fitter of the two to represent the Pharmaceutical Society in that centre. A large number of other centres had only three members, and some of the others were so close to the great Metropolis that they felt there was no necessity for having a local representative at all. As to Scotland, in no case was there any failure to nominate in a town with any considerable number of members. Eighty-seven centres had only one member, and six only two members qualified to fill the office. With regard to Wales, he found the remarkable state of things that in one town there was nobody at all qualified to be local secretary, and when the next appointments were made he thought that centre might be deleted. There were other matters which claimed their attention. There were many towns in the list which might do better than they had done. When he mentioned that there was a town of no less than 71,000 inhabitants which contained only two members of the Society, another of 11,000 containing only one, another of 51,000 containing only four, and another of 52,000 containing only six members of the Society, his colleagues would agree with him that that was not a proper state of affairs. It was not sufficient for the Council to deplore the matter, but it behoved them to find a remedy for it. A good deal of this defection was no doubt due to the fact that when the late Local Government Act was passed it formed a number of electoral centres, which took their names from small country towns where they would originally hardly have expected to have a local secretary. It occurred to him that some of those towns might be grouped, and that within the next twelve months they might hit upon some mode of doing that, and also grouping some of the others that already existed. There were many towns which were more loyal to the Society where there were five or six members of the Society who had elected a local secretary, the office in many cases passing from father to son. He could not help thinking that if they could be induced to let the office pass round it would be a good thing; the very passage of the office from one man's hand to another might enable the second man to persuade other chemists in the town to belong to the Society who had refused the former local secretary. He could speak very confidently on this matter, as he was a sinner in this direction, having held the office of local secretary ever since his father's death. The main reason for bringing forward the matter was to be found in the tail-end of the resolution, viz., to strengthen the Society throughout the country. All the members of the Council would agree with him that this was a desirable end to accomplish, and that there would not be the least hesitation in passing the resolution.

Mr. STORRAR seconded the motion. Mr. Cross had explained in great measure the reasons for the failure to nominate, but behind that there was unfortunately a great apathy on the part of many members to the work of the Society, and he hoped the Committee would be able to devise some means of awakening more interest. The suggestions for the grouping of towns would, he thought, be very useful, and also the Scottish plan of dividing a county between the local secretaries in that county.

Mr. SYMES hoped the resolution would pass, though possibly the Library Committee would be a better one to deal with the matter. He did not think the Council could be said not to appreciate the importance of this question, as could be seen by the circulars, which were issued with reference to the nomination. Again, when the local secretary was appointed, a form was sent him, in which his duties were detailed, whilst he was also informed that he had a free hand to do anything else he could to promote the interests of the Society in his neighbourhood. For some years there had been a feeling that something should be done, but it was not so easy to decide what action could be taken. So long ago as 1887 he moved a resolution "That with a view to promoting the interests of those engaged in pharmacy and pharmaceutical education in the provinces, the Library, etc., Committee be requested to consider the best means of accomplishing this object either by inviting local secretaries to furnish annual reports or otherwise." The Council was much indebted to the local secretaries for what they did, but no doubt in many centres they did not feel called on to do very much, and that might lead to a certain amount of lethargy on the part of members with regard to the election. Six months after the resolution he had referred to, the Committee recommended that the local secretaries be required from time to time to furnish such reports when called upon to do so. He feared that in asking merely for a report the local secretary might feel a difficulty in knowing what was wanted, but if a number of queries were formulated as to the number of population, the number of members in the place, the educational facilities, and so on, a good deal of information might be collected, which would be very useful when any special effort was required.

Mr. HAMPSON said he thought some inquiry was desirable, especially with regard to the desirability of rearranging the centres, and possibly deleting some of them. It was an illustration of the democratic foundation of the Society that these local secretaries existed, for he thought there was scarcely any other institution of a similar character which had such agencies working for it. It was very important that a broad system should be maintained; and he did not think that the results, even of the last month's nomination, were so bad as they might appear at first sight. How could one expect any enthusiasm amongst the members when there were so few of them? The crux of the whole matter was an increase in the membership, and if this inquiry led to that result there would be no difficulty in filling up the local secretaryships. It was little more than a farce to go through the form of voting for a man when there was really no choice. He hoped that in the near future, by legislation or otherwise, the membership would be largely increased, and then the question of local secretaries would no longer present any difficulty.

Mr. YOUNG said he should support the resolution in the forlorn hope that something would come of it. Attention had been drawn to the fact that in a large number of towns there were only one or two members of the Society, which was only another way of saying that only about one in ten of the trade was a member. And not only did they fail to attract members into the Society but members themselves could not be acquitted of apathy with regard to it; for even in towns where there were several members they often did not take the trouble to nominate. If the Council could do many things which it was absolutely impossible for any Council to do it could soon attract members and gain popularity. His own feeling was that the first thing to do was to educate their own members as to the necessity of supporting their own Society, then there would be more chance of attracting those who were still outside.

Mr. ATKINS thought the Society represented the trade to a rather larger extent than Mr. Young had indicated, though he agreed absolutely with the tone of his remarks. He thought Mr. Cross had made out a case for inquiry, though he was not very sanguine as to the result. He believed that good work would always be recognised there, and he knew there were local secretaries who did take trouble and spend a great deal of time in behalf of the Society, which ought to be fully recognised. He thought the suggestion that there should be a kind of rotation in the office was a very good one, and that with regard to grouping was also worthy of consideration. He could confirm what Mr. Symes had said as to this question having been often considered, but he did not know why it should not be considered again.

Mr. ALLEN said he quite agreed with Mr. Hampson, but he was not quite sure that the scope of inquiry was as wide as it should be. He should be sorry to say a word which would reflect on any individual local secretary, but he knew that while some did everything they could for the Society there were others who were only a detriment to it. He had no difficulty in defining what the duties were, and in many cases those duties were admirably performed. But in many cases where there was abundant evidence, especially to the officials of the Society, that those duties were not properly

carried out, there ought to be some power of effecting a change. If the motion would admit of doing away with some of these centres he should agree with it.

Mr. CORDER said the well-being of the Society depended in a great measure on the local secretaries, and he was afraid in many cases the duties were performed in a perfunctory manner. He referred especially to the Benevolent Fund, for he was perfectly sure the trade at large were not asked to subscribe. The list was sent down, and probably a lad was sent round to collect the subscriptions, and there the matter ended. A new man might come into a town and open a shop, and he very much questioned if he was ever asked to give a subscription.

Mr. PARK was very pleased to see that the suggestion that there should be a change from time to time in the local secretaryship had come from a gentleman who, with his father before him, had held office for fifty years. He thought it very desirable that there should be a change—not too often—perhaps every five years. It was almost impossible for one man to be *persona grata* to every one of his *confrères*, and by getting another gentleman to accept office more new members might be introduced. If any gentlemen had held office for a number of years, it seemed rather invidious to suggest a change, unless there was some general recommendation to that effect, but he thought it would be to the general interest of the craft that this should be done. He believed that not only the Council, but the local secretaries themselves, knew pretty well what the duties of the office were, but it was found at Plymouth that the members of the Society generally were not so well informed, some of them apparently thinking that it was the duty of the local secretary to act the part of a detective and make inquiries, and, if necessary, prosecute for breaches of the law. It would be well, therefore, for the Council to let the trade in general know what the duties really were.

Mr. BOTTLE said he had no objection to the resolution, but he was impressed with the idea that there was a singular opening for the country members of the Council to make themselves useful. A great deal of good would be done if each member who represented a territorial district would undertake to look into this matter and visit the various towns in his neighbourhood. They all knew the great advantage which had accrued in recent times from the visits paid by the late President to various parts of the country, and though he did not suppose that any member of the Council, any more than himself, could hope to make as much impression as Mr. Carteighe did, he was quite satisfied that everyone could do something, and if they would put themselves in communication with the local secretaries, and make personal inquiries on the spot, a great deal of information might be obtained which would be of great use to the Committee which dealt with this matter. A stranger might often do more than the local secretary himself could. He should be glad to undertake this duty for Sussex and the lower portion of Kent, and if the Treasurer would undertake the upper division, it could be ascertained why the appointment of local secretaries in Kent was not properly carried out.

Mr. MARTINDALE thought the enlargement of area suggested by Mr. Cross was a very good idea. He knew of one small town where there were only two chemists; one was a member and local secretary, and the other refused to join the Society for that reason.

The PRESIDENT said he gathered that all present were willing to accept this resolution, and he had no objection to it himself; and he agreed largely with Mr. Bottle that this was an opportunity for the provincial members to collect information which would be very useful to the Committee which dealt with the matter. He would suggest, however, that the resolution should be slightly enlarged, so as to include a reference to the method of appointment as well as the duties and position of local secretaries, about which there was not much doubt as to the Committee to which the reference should be made. He thought there could be no doubt that the General Purposes Committee was best fitted to deal with it, as it included the whole of the Council, and it was very desirable in such an enquiry to have the assistance of all the country members. The change of *personnel* was a matter of detail which need not be referred to at present, but he had lived long enough to know that there could be no absolute rule on this question, at any rate in the case of Shrewsbury he should be sorry to see any new rule introduced.

Mr. CROSS, in reply, thanked the Council for the way in which his resolution had been received. It occurred to him that the General Purposes Committee was the proper one to refer the matter to, because they were all on the Committee, and could all take part in the discussion. He thought Mr. Young had made a rather hasty computation as to the number of the trade who belonged to the Society. One remark that Mr. Young had made strengthened his argument in favour of the resolution, and that was that they should teach their members, and the only way to do this was to have someone on the spot who was able and willing to do it. He did not agree with the remark that the resolution did not cover the whole ground, because the second part suggested that they should consider and report generally on the position of local secretaries. He did not think any alteration in the mode of election would come within the purview of the Committee he proposed; at the same time he thought all that they wanted could be carried out under his motion. Recently their Secretary had published a list of names of people who had been struck off the Society's list because their addresses were not known. This was a matter that the local secretary should attend to, and he should be particularly interested in getting the correct address on the Register. He could refer to one case of a pupil of his own who had been in business five years in a large town in Lancashire; his address was not known to the Secretary of the Society, but if the local secretary had done his duty his address would have been given before. They were all complaining about unqualified men being in the business and opening shop, but here was the case of a man who had been in business for five years, and the local secretary had not communicated the fact that there was a man not on the Register in business close to him. He hoped the General Purposes Committee would be able to make something of the matter.

The resolution, with the addition of the words "duties, position, and method of appointment," was then put and carried unanimously.

GENERAL PURPOSES.

This report, which referred simply to local matter, was taken, as usual, in Committee. On resuming, the report and recommendations were adopted and special resolutions passed authorising the Registrar to take proceedings against certain parties named.

MEETING OF THE EXECUTIVE OF THE NORTH BRITISH BRANCH.

A meeting of the Executive of the North British Branch was held in the Society's House, 36, York Place, Edinburgh, on Thursday, November 26, at 11 a.m., Mr. J. Laidlaw Ewing in the chair. Present:—Messrs. Bowman, Coull, Currie, Davidson, Ewing, Fisher, Hardie, Henry, Johnston, Kermath, Kerr, Lunan, McAdam, McLaren, Mitchell, Moir, Paterson, Storrar, and Strachan.

The minutes of last meeting were read and approved.

The CHAIRMAN intimated that the deputies from the Executive to the Conference at Liverpool, along with several other Scottish pharmacists, had an opportunity of meeting Mr. Carteighe, and presented him with a suitably-engrossed extract minute of last meeting, referring to his retirement from the Presidency of the Society. He was considerably touched by their unanimous expression of respect and esteem, and thanked them very cordially.

GENERAL PURPOSES COMMITTEE.

The ASSISTANT-SECRETARY read the report of the General Purposes Committee, from which it appeared that at a meeting on October 29 the Chairman reported that he had seen the Treasurer of the Royal College of Physicians, Dr. P. A. Young, from whom he ascertained that a meeting of the College would take place in November, when the details of the transfer of their Materia Medica Museum would be finally completed, and it would thereafter be immediately handed over to the Society. It was also expected that the College would hand over the central floor case, which contained the major part of the Martius collection. The Chairman further explained that from considerations of finance it was deemed inadvisable to proceed at once to place the collection in its permanent position. It was proposed to have the room formerly used as a laboratory cleared out, and have the collection placed in cases in this room temporarily, so that it would be available for reference or study.

The report also stated that subscriptions amounting to £24 had been intimated towards the purchase of the Scoresby-Jackson Museum from Mrs. T. A. G. Balfour. There had been some discussion in Committee on a suggestion of Mr. Lunan as to the disposal of duplicate specimens, and it was mentioned that an application, which had been favourably entertained by the Council, had recently been made on behalf of the newly-instituted chair of materia medica

at St. Andrews. Nothing, however, could be done meantime, and the matter was allowed to lie over.

The report and recommendations were unanimously adopted.

NOMINATION OF EXAMINERS.

The Executive then went into Committee to consider the report of the Special Committee for nomination of examiners.

The CHAIRMAN explained that the two members who retired from the Examining Board this year were Messrs. Boa and Jack, and Professor Geddes, one of the first teaching examiners under the new regulations, had also found it necessary to resign, as he was going on a tour in the Mediterranean, and could not guarantee that he would be back in time for the January examinations. The Chairman expressed his regret that Professor Geddes had felt it necessary to resign, and explained the steps that had been taken to secure a successor. In the course of a discussion, it was suggested that they thould follow the method which obtained in the Universities of advertising for examiners. One member advocated this procedure on the ground that it would enable those who had qualifications to make application who might not otherwise care to do so. It was suggested that that might lead to canvassing, but one member said it had recently come to his knowledge that there was canvassing at present. The members of Committee, however, refused to allow such a statement to be made without contradiction. One of them, however, advocated a system whereby those put forward for nomination to the Examining Board should be ascertained not only to have passed certain examinations or gained certain honours, but that they had followed out their studies and were thus competent for examination work. While he had nothing to say against past examination boards he was in favour of the appointment year by year of some younger members of the profession to the position. But he would deprecate the appointment of a large number of new men at any one time. It was further suggested that a reserve list should be made up during the year from which nominations might be made. An old member of the Executive said he had heard similar discussions on this subject year after year, and however bad the system of nomination might be, he thought they had no reason to blush, for they had always been able to get together a strong and efficient Board of Examiners.

Ultimately the recommendation of the Sub-Committee was adopted, and the following resolution which was moved in Committee was declared carried in open meeting:—"That Isaac Bayley Balfour, Regius Professor of Botany in the University of Edinburgh, John Gibson, Professor of Chemistry in the Heriot Watt College, Edinburgh; Alexander Davidson, Montrose; James Laidlaw Ewing, Edinburgh; Jonathan Innes Fraser, Edinburgh; Thomas Maben, Hawick; John Nesbit, Portobello, and John William Sutherland, Dumfries, be nominated for election by the Council as members to the Board of Examiners for Scotland for the year 1897."

The new members of the Board for next year are Professor Bayley Balfour, Mr. Maben, and Mr. Davidson.

The CHAIRMAN, on his own behalf and that of his colleagues, thanked the Executive for having nominated them to this office. During the past year they had worked most cordially. They regretted the loss of Professor Geddes, but they were confident that the examinations would still be carried on as successfully as hitherto.

Mr. DAVIDSON also thanked them for having elected him. If his nomination were confirmed by the Council, no effort would be wanting on his part to merit the confidence they had placed in him.

On the motion of Mr. C. F. HENRY, seconded by Mr. BOWMAN, a vote of thanks was given to the Committee, who had fulfilled the important and delicate work of making these nominations. A vote of thanks was also given to the retiring examiners on the motion of Mr. Currie, seconded by Mr. Johnston.

COLOURLESS ARSENIC.

Mr. MITCHELL, Inverness, asked if it was an infringement of the Arsenic Act to sell "Kerney's rat poison," which contained about 50 per cent. of white arsenic, and was mixed with wheaten flour, so that it was a colourless preparation.

Mr. J. R. HILL said if it was a colourless preparation it was certainly a contravention of the Arsenic Act to sell it. It must be mixed with either soot or indigo if it was sold in quantities less than 10 lb. Of course the Society had nothing to do with it. It was entirely a matter for the police, and did not in any way come under the restrictions of the Pharmacy Acts in this aspect of it.

Mr. MCLAREN said his experience was that the provisions of the Arsenic Act were more honoured in the breach than the observance. Several members denied that, and said they had always complied with the provisions of the Act in selling arsenic, except in the case of arsenic sold for painting boats, in which case it was always sold in quantities greater than 10 lb.

The question was also raised as to whether the hydrochloric solution of arsenic came under the definition of the Arsenic Act.

Mr. J. R. HILL replied that it did, as it was a colourless preparation of arsenic, but Fowler's solution did not come under the Act.

ONE-MAN COMPANIES.

Mr. C. F. HENRY asked the members of Council present if anything had been done by the Council or was contemplated with regard to the assumption of titles by limited liability companies.

Mr. STORRAR said generally that the subject of the practising of pharmacy by companies had been considered by the Council, and they had also had under consideration the question of one-man companies. They would have seen from the decision in the Salomon case that the House of Lords had declared these one-man companies could not be legally interfered with, and that would give a great impetus to the effort to amend the Companies Acts. That was necessary not only in the interests of registered chemists, but also in the interests of the public. His own opinion was that it might be necessary to so far recognise the existence of those companies as to make it compulsory that every shop which they opened should have a registered manager. The Council were quite alive to the evils of the existing situation.

This was all the business.

EVENING MEETING IN EDINBURGH.

The first evening meeting in Edinburgh of the present session was held in the Society's Hall, 36, York Place, on Friday, November 27, at 8.30, Mr. J. Laidlaw Ewing in the chair.

The CHAIRMAN, in the course of a brief opening statement, said the General Purposes Committee had made an arrangement by which it was expected that Professor Patrick Geddes would deliver an inaugural address at this, the opening meeting of the session. He having gone on an expedition from which he will probably not return till the end of the year, this arrangement has at the last moment fallen through. The Committee endeavoured to arrange for some other person to give an address, but the time was so limited that nothing could be done, and it was therefore arranged that we should begin the session with an ordinary meeting, and dispense with an inaugural address on this occasion. It had been arranged that at the second meeting of the session Mr. Maben should make a contribution, and on being asked he kindly consented to do so at this meeting instead. The Executive was very desirous that these evening scientific meetings should be maintained, and the interest in them kept up. It was not desired to forget that the higher intellectual and scientific and professional element deserved careful attention and diligent cultivation. In these meetings they could exchange views on topics relating to their common craft, and while each derived an individual benefit they were also helping to raise the standard of knowledge and elevate the professional status of the craft of pharmacy as a whole. The meetings also furnished valuable opportunities for that exchange of those fraternal courtesies which tend to minimise and in a large measure abolish little jealousies and differences which are almost inevitable among those who are prosecuting the same calling in the same district.

A paper was then read on—

THE MANUFACTURE AND USE OF COMPRESSED GASES, AND THE PRODUCTION AND USE OF ACETYLENE AS AN ILLUMINANT,

BY THOMAS MABEN,

and is printed at p. 481. The lecture was illustrated by limelight views of the construction and working of the apparatus employed in the manufacture, compression, and storage of the various gases and in the manufacture of acetylene from calcium carbide and its use as an illuminant. By means of a biunial lantern, one lamp of which was lighted by oxyhydrogen limelight, and the other by acetylene, the relative illuminating power of limelight and acetylene was strikingly shown, the advantage being evidently on the side of the former. The lecturer also by a simple arrangement of an ordinary flask with thistle funnel and delivery tube attached to an acetylene burner showed the ready formation of the gas and

its combustion, and at the close of the meeting Mr. Walker, the Glasgow agent of the maker, exhibited in operation and explained Read, Holliday and Son's automatic acetylene gas generator.

The Chairman, in moving a vote of thanks to Mr. Maben, said he was disposed to look at this subject from a practical point of view, for they frequently had to handle cylinders of oxygen which was now employed for various therapeutic purposes. He was very much relieved to hear the assurance that they were free from danger, and that they could send out these iron tubes with safety. Their messengers always seemed to carry them with fear and trembling, and often when they got them to the railway station the officials refused to have anything to do with them. They were frequently ordered for immediate use in critical cases of pneumonia, and owing to the delay they arrived too late, with the result that they had them returned and got nothing for their trouble. They were greatly indebted to Mr. Maben for the great amount of trouble he had taken in bringing the subject before them, and he proposed that they should give him a very hearty vote of thanks. The vote of thanks was accordingly awarded.

Mr. Maben, in reply, said he had to thank them for the patient way in which they had listened to him. He also begged to move a hearty vote of thanks to Mr. Walker and his assistant who had come from Glasgow specially to exhibit the acetylene apparatus, and to Mr. Banks for his admirable manipulation of the lantern. This proposal was heartily responded to.

The Assistant Secretary then drew attention to the recent additions to the Library and Museum, and on the motion of the Chairman a vote of thanks was awarded to the donors of books and specimens, after which the meeting then closed.

THE USE OF GAS FOR DOMESTIC LIGHTING.*

BY PROFESSOR VIVIAN LEWES.

Most people imagine that gas of the parliamentary standard of "sixteen candles" ought to be as efficient in lighting a room as sixteen separate candles. But a very wide difference exists between illuminating value and illuminating effect. The photometer usually employed in comparing the value of various illuminants is a modification of Dr. Letheby's open-bar photometer (itself a development of Bunsen's "grease-spot" test), and consists essentially of a screen of greased paper capable of sliding laterally upon a graduated horizontal bar, at each end of which suitable provision exists for the placing respectively of the standard light and that which it is desired to test. The well-known phenomena of the effects of transmitted and reflected light and the application of the law of "inverse squares" enable us to comprehend that the use of the words "16 candle power" is merely a crude way of expressing the fact that a certain light, at four times the distance, exerts upon the photometer screen precisely the same illuminating power as the standard candle. In such a test it is obvious that the principles underlying the illuminating effect of a burning jet in an ordinary room are largely ignored. In the photometer only the horizontal rays of the illuminant are compared, and in actual practice it is precisely those rays which are of least value. Then again, reflection, which plays a very important part in domestic lighting, is not taken into account by the official test. Moreover, the standard itself is not a constant one, it being impossible to produce two sperm candles absolutely identical in luminous intensity. When to these impeachments we add the consideration that no two observers have precisely the same visual power, it is easy to concur in a scathing condemnation of official methods. The direction in which improvement is possible is shown by a radial photometer, such as Dibdin's, which permits of comparisons being made at all angles. With this radial instrument series of experiments has been made, with the object of establishing the comparative merits of argand, flat flame, regenerative, and incandescent burners. The result of those experiments is that at zero (the horizontal comparison) the incandescent burner is enormously superior to its rivals. At 40°, however, it is little better than an argand, whilst the regenerative (Wenham, etc., type) burner steadil y improves in working value. At 60° both the argand and the incandescent are "unreadable," and the regenerative and flat flame varieties only survive, the former being at its best, whilst the latter is only a glimmer by comparison. The moral seems to be that the regenerative type is the best for domestic purposes, and this moral has been emphasised by the recent exhaustive investigations on the subject of barrack-room illumination, conducted by Col. Moncrieffe.

(*To be continued.*)

* Notes of lectures recently delivered at the Society of Arts.

NOTES AND FORMULÆ.

Detection of Added Alkali in Prepared Cocoa.

After a long series of experiments, Depaire finds that prepared cocoa powders contain from 25 to 39·2 per cent. of fat, and 3·4 to 6·7 per cent. of moisture. The aqueous solution of the ash from 100 grammes of such cocoas requires for saturation from 34 to 92 C.c. of decinormal acid. Thus the ash from a dry cocoa containing 40 per cent. of fat should not reasonably be expected to use up more than 100 C.c. of decinormal acid for every 100 grammes of cocoa burnt. All alkali in excess of this figure may be regarded as "added." The figures obtained for the ash from 100 grammes of this cocoa

containing	1 gramme	of added	carbonate	of	potassium	=	153 C.c.
,,	2 grammes	,,	,,	,,	,,	=	306 ,,
,,	3 ,,	,,	,,	,,	,,	=	459 ,,
,,	1 gramme	,,	,,	,,	sodium	=	190 ,,
,,	2 grammes	,,	,,	,,	,,	=	380 ,,
,,	3 ,,	,,	,,	,,	,,	=	570 ,,

of decinormal soda. Obviously the calculation for added soda will be influenced by the amount of "butter" present, the constant above given being for a cocoa containing 40 per cent. of that fat.—*Bull. de la Soc. Roy. de Pharm. de Brux.*, xl., 233, after *Bull. du Serv. de Surveil. de la Lab.*

Flexible Iodoform Bougies.

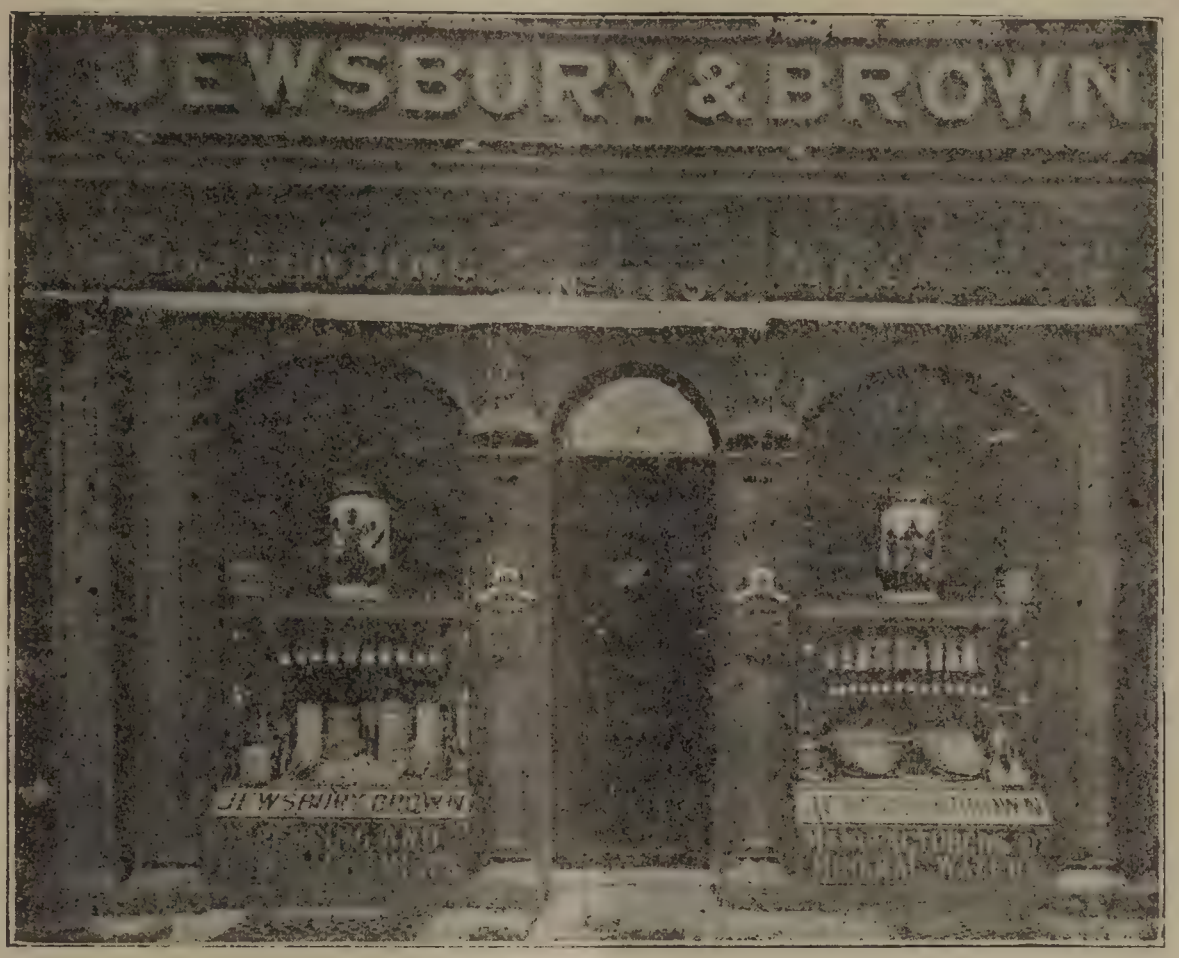
(1) White gelatin, 10; distilled water, 24; glycerin, 32; powdered iodoform, 40; spirit of soap, 2 parts. The basis is melted on the water bath, the iodoform added, and the liquid aspirated into glass tubes of the requisite diameter, which are then plunged into cold water. (2) Iodoform, 92½; powdered gum arabic, 5; distilled water and glycerin, of each 2½ grammes. Make a homogeneous mass and roll out on a sheet of glass so as to obtain 40 bougies 7·5 centimetres long. Dry at a very moderate temperature. (3) Iodoform, 3 grammes; shredded cacao butter, 2 grammes; powdered gum acacia, 1 gramme; oil of sweet almonds and glycerin, of each 4 drops; distilled water, *q.s.* (2 to 4 drops). Beat into a mass and roll out to the desired length on a sheet of glass dusted, as requisite, with a little starch powder. Bougies made by this formula remain flexible for some time.—*Journ. de Pharm. d'Anvers*, lii., 281, after *Osterr. Zeits.*

Detection of Traces of Iodine in Presence of Bromin and Chlorine.

Ludwig finds that aldehyde containing ozone liberates iodine from its combinations, so that when that liquid is distilled in the air it gives a very apparent coloration with a solution of iodide of potassium; but when distilled in an atmosphere of CO_2, no such colour is produced. This aldehyde distilled in the air may be used to detect iodides in the presence of a great excess of chloride or of bromides, and is sufficiently delicate to reveal 1 in 50,000. The iodine is indicated by means of starch solution or by dissolving out with carbon bisulphide.—*Annales de Chim. Analyt.*, i., 420.

AN OLD MANCHESTER PHARMACY.

This week we are able to give two illustrations of the exterior and the interior of a well-known Manchester pharmacy which has existed through the allotted threescore years and ten of human life. By the time this article meets the eyes of our readers the pharmaceutical business of Messrs. Jewsbury and Brown will have closed in a green old age. From its origin to its close it has been typical of all that is best in pharmacy both as a profession and as a trade. It was opened about the year 1825 by two young druggists, Jewsbury and Whitlow, who had served an apprenticeship with a Mr. Gaulter, the shop of whom was situated at the corner of the next street, Tib Street.



Jewsbury was no less strenuous and eager than the other members of the family. He and his partner were not long content to follow the ordinary humdrum round of the shop, but very soon turned their attention to the cultivation of "profitable extras" and must needs branch out into the then new sphere of the manufacture of aërated beverages. It is stated that when the shop was closed at 9 p.m., Jewsbury would don an old suit of clothes and a pair of clogs, and retire to the cellar to spend the remaining hours of the night and the early ones of the morning in compounding the effervescing drinks to be sold on the following day. He married the sister of his partner. After the dissolution of his partnership with Whitlow, and before William Scott Brown was admitted a partner, he was seized with paralysis, in consequence of which he ultimately retired from the business and took over the business of John Whitlow, a draper, in Deansgate, and founded the firm which today is known as Jewsbury, Crux, and Gething.

Of Whitlow very little appears to be known, beyond the fact that after he dissolved partnership with Jewsbury, about 1834, he went to Liverpool, and carried on business there as a chemist.

Henry Richard Smith Jewsbury was the son of a yarn agent, and the brother of the two authoresses, Maria Jane Jewsbury and Geraldine Jewsbury. Wordsworth was a great friend of Maria Jane Jewsbury, and expressed warm admiration for her writings, both in prose and verse. Of her he stated that in the whole range of his acquaintance she had "no equal" as regards "quickness in the motions of her mind." Geraldine Jewsbury, after having yielded herself up to the influences of Shelley, was attracted by the earlier writings of Thomas Carlyle, and in a short time became a correspondent of his and his wife's. Thus began a warm friendship between Mrs. Carlyle and Miss Geraldine Jewsbury, which lasted for half a century, and was only ended by the death of the former. Geraldine Jewsbury wrote several novels which are almost forgotten, "Zoe, or the Two Lives," and "The Half-Sisters" being, perhaps, the best known.

There is a reference to the ginger beer and lemonade of Jewsbury and Whitlow in an amusing book on "Manchester Men and Manners," published in 1833. The author of 'Gimcrackiana' in describing "Manchester Races in 1823" writes:—

"Next to the booths descend the men to bet
And deluge their insides with *heavy-wet;*
Some claim their winnings with a joyful face
And risk more chances on the coming race;
Others *edge* off to clear their losing debts,
And curse the luck of all their former bets.
Then while the porter runs in strong full tide,
Cries such as these resound from side to side:—
'Here! waiter, waiter! come, be quick as fire!
Bring us two quarts of Whitbread's stout entire'—
'Three brandy bottoms'; 'Three of gin, too, here';
'A squib of rum in half a pint of beer!'
(Cider and brandy then were all the rage,
Unknown the bliss of this improving age;
To thirsty souls the name be ever dear
Of JEWSBURY'S 'celebrated ginger beer,'
And let the meed of cool-tongued praise be paid
To WHITLOW'S 'effervescing lemonade.')"

William Scott Brown was the son of a hosier whose shop in Market Street (No. 27) is still in the hands of a lineal descendant. Young Brown was first apprenticed to Mr. John Lessey, druggist, in Piccadilly, with whom, however, he did not stay long, but was transferred to Messrs. Jewbury and Whitlow. Jewsbury's paralysis interfered so greatly with his attention to business that in February, 1845, he found it advisable to admit W. S. Brown, who was then an assistant, into partnership, and the style of the firm was altered to Jewsbury and Brown. The ever-extending growth of the business dates from that year, and is directly due to the sound commercial principles which the junior partner adhered to in all his concerns. He was imbued with the belief that the best article at a moderate price was a matter of mere justice to his clients. It was current opinion that he was the finest salesman in Manchester, and always gave satisfaction to the buyer. The advantages of advertising were soon apparent to his quick perception, and he freely availed himself of the new power. The qualities which gave him such pre-eminence in his own business relations he freely used on behalf of his fellow citizens and his brother pharmacists. In 1868 he was elected a city councillor, and in this office rendered very valuable service, especially in the departments concerned with the health of the city. His connection with the city council closed in 1880, his unsatisfactory health and the onset of deafness causing him to resign. Mr. Brown's activity in pharmaceutical matters is still fresh in the minds of many pharmacists. Upon the formation of "The Manchester Chemists' and Druggists' Association," in 1868, he was elected Vice-President, and in 1870 he was elected President; this latter office he continued to hold until his death in 1891. He was elected to the Council of the Pharmaceutical Society in 1870, and was made a Vice-President of it in 1872.

William Stones, nephew of W. S. Brown, was taken into partnership with his uncle in 1874, and, upon the death of the latter, became the sole proprietor of the business. Previous to this time, the mineral water business had grown to such proportions as to have quite overshadowed the pharmaceutical department, and for many years had been conducted as a separate establishment. The continued increase of this branch and of the trade in the Oriental tooth paste determined Mr. Stones to build the present fine factory at Ardwick Green, in the management of which he has as partner Mr. Robert Bardsley. Besides the general antique appearance of the pharmacy, it was noted among local pharmacists, until quite lately, for always having assistants wearing the somewhat old-fashioned white aprons, and to the last a feature of it is the huge, quaint, solid brass screen occupying the centre of our photograph of the interior. It is a melancholy satisfaction to know that the close of an occupancy of seventy-one years takes place with the complete and thorough dismantling of the premises.

PARLIAMENTARY NOTES AND NEWS.

EVIDENCE OF PARLIAMENTARY RESUSCITATION is accumulating, and each day sees the resumption of long suspended meetings of Commissions and Committees which a beneficent government has appointed for the protection of the public from dangers real and imaginary. The public beer is being investigated by the Treasury, and the public food is engaging the attention of the Commissioners on tuberculosis, who are now holding frequent meetings. On November 18, witnesses from the Local Government Board and the Board of Agriculture were examined as to the present powers of the two Departments which will be immediately concerned in the administration of any protective enactments which may result from the deliberations of the Commissioners. Dr. R. Thorne Thorne, medical officer of the Local Government Board, and medical adviser to the Privy Council, was among the Commissioners present. Since that date the views of the butchers have been submitted by Mr. Field, M.P., and the testimony of the City of London Medical Officer of Health, of the inspector of Smithfield Market, and of Mr. Rayment, F.R.C.V.S., veterinary inspector of the Cattle Market, has been heard.

CORONERS' LAW is so bad that the Public Control Committee of the London County Council has been moved to "take it up." A deputation from that Committee has consequently waited upon the Lord Chancellor to impress upon him the desirability for an early amendment of the law relating to coroners' inquests. The ground upon which the deputation based its plea was that the procedure under the present law is obsolete and inefficient, and with a view to bringing it more into accord with modern ideas twenty-two suggestions were submitted for his Lordship's consideration. The most important of these suggestions are those having reference to a reduction in the number of jurymen to one-half, and advocating the appointment of medical investigators to inquire into all uncertified deaths. The medical investigators would thus take the place of the present functionary—the coroner's officer—who, however good a beadle he may be, is quite incompetent to make those preliminary investigations of a medical nature which might in many cases save the county the expense of an inquest. The sympathies of a Chancellor are exceedingly large during his tenure of office, hence the deputation was assured that the whole of the twenty-two "suggestions" should receive sympathetic consideration. The reduction in the number of jurymen, however, presented very considerable difficulties. Chemists and druggists, in common with the average citizen, will hope Lord Halsbury may see a way of overcoming those difficulties.

THE OYSTER has acquired the Parliamentary distinction of having a special official Yellow Book devoted to the record of its reprehensible habit of flourishing in objectionable media. In fact, the whole of the supplementary annual report of the Local Government Board just issued, is nothing less than a very valuable contribution, compiled by the medical officer, Dr. Thorne Thorne, on oyster culture in relation to disease. The Supplement comprises five divisions—an introductory impeachment of edible molluscs by Dr. Thorne; a report by Dr. Bulstrode on the cultivation and storage of oysters along the coasts of England and Wales; Dr. Klein's bacteriological report; Professor Conn's report on a typhoid outbreak in Connecticut; and extracts from the proceedings of the French Academy of Medicine relating to the spread of disease by means of oysters. It appears that the case against the oyster is one of "evil communications," for Dr. Bulstrode conclusively shows by his carefully drawn maps, as well as by the record of his personal investigations, that very few of the layings, fattening beds, or storage ponds round our coasts can be regarded as theoretically free from sewage contamination, or at any rate the risk of it. The difference between the various layings is apparently one of degree. In some cases the conditions are stigmatised as "filthy in the extreme," whilst the highest praise bestowed is extremely faint in quality. Southend, Grimsby, and the Medina (I.W.) are singled out as types of the objectionable conditions, and the beds on the Kent and Essex coasts figure among those "almost secure against risk." The Yellow Book attracts special attention by the important nature and scientific value of its text, but is rendered far more comprehensible and useful by the admirable collection of photographs, maps, and bacteriological micro-photographs bound with it. Dr. Thorne has done good service in proving that one can be official without being dull, and deal with a technical subject without making it incomprehensible to human understanding.

PHARMACEUTICAL JOURNAL.

A Weekly Record of Pharmacy and Allied Sciences.

ESTABLISHED 1841.

Circulating in the United Kingdom, France, Germany, Austria, Italy, Russia, Switzerland, Canada, the United States, South America, India, Australasia, South Africa, etc.

Editorial Office: 17, BLOOMSBURY SQUARE, W.C.

Publishing and Advertising Office: 5, SERLE STREET, W.C.

LONDON: SATURDAY, DECEMBER 5, 1896.

THE COUNCIL MEETING.

At the opening of the proceedings the President mentioned that he had received from Mrs. Langdon Down a letter thanking the Council for the sympathy expressed at the last meeting.

The formal appointment of Mr. Thomas Tickle as the Salters Research Fellow was announced, as well as the death of Mr. H. A. Thomas, late Divisional Secretary for the City, and of Mr. Gulliver, formerly Divisional Secretary for St. George's, Hanover Square.

The members of the Boards of Examiners (see p. 484) for the ensuing years were then appointed, as well as the Superintendents and Deputy-Superintendents of written examinations (see p. 485).

The report and recommendations of the Finance Committee were adopted without further comment than the President's reference to the donation of ten guineas to the Benevolent Fund from Mr. Edward Burden.

On the recommendation of the Benevolent Fund Committee, four grants, amounting in all to twenty-five pounds, were ordered to be paid, and the death of an annuitant was reported.

The Vice-President, after giving some particulars as to the cases in which grants had been made, explained that the forecast he made at the last meeting as to the future position of the Committee has not been realised. The balance in hand at the end of the year would not be more than about three hundred pounds, while on January 1st next there would be nearly double that amount required to pay the annuities then falling due. He hoped, therefore, that any members who have surplus cash to dispose of would bear that circumstance in mind.

Mr. Atkins gave an illustration of the good work done by the annuities from the Benevolent Fund, in which the widow of an old member of the Society had been saved from destitution by the grant of an annuity, and he expressed his conviction that if members of the trade could realise the good done in such cases, they would give the Fund much warmer support.

The President mentioned two cases in which the benefits of the Orphan Fund would have been available for children if their fathers had been for three years subscribers and he hoped this would be borne in mind, as there is now the nucleus of a grand Orphan Fund, which might be of great service.

The chief points in the report of the Library, etc., Committee were the regulations relating to the Burroughs Scholarship, and a recommendation for the purchase of six microscopes for the use of the Board of Examiners, both of which were adopted.

Mr. A. H. Hinde was appointed Local Secretary for Lowestoft, and Mr. S. A. Sturton, Divisional Secretary for Hammersmith.

Votes of thanks were passed to the members of the Boards of Examiners for their services during the past year, and reference was incidentally made to the part taken by Professor Geddes in the work of the Board of Examiners in the north.

In accordance with a notice on the agenda, Mr. Cross moved that the General Purposes Committee should be instructed to consider and report upon the duties, position, and method of appointment of local secretaries. His object was to strengthen the position of the Society throughout the country. The fact disclosed at the last Council meeting that at forty-six centres in England, sixteen in Scotland, and seven in Wales there was no nomination, had appeared discouraging, but he found on inquiry that the case was not so bad as it then seemed to be. The main thing requisite was to increase the number of members of the Society, which is in many places disproportionately small.

Mr. Storrar, in seconding the motion, hoped the Committee would be able to devise means of awakening more interest.

Dr. Symes supported the motion, and referred to a proposition he had made some years ago that the local secretaries should be invited to furnish annual reports. He also suggested, with that object, that queries should be put so as to collect information which might be useful when any special effort was required.

Mr. Hampson thought some inquiry was desirable. The fact that the Society has local secretaries showed its democratic constitution, distinguishing it from other institutions of a similar character. The really crucial point was to increase the membership.

The other members of Council who spoke on the subject agreed in thinking inquiry desirable and in attaching considerable importance to the work of local secretaries when the duties of the office are zealously carried out. At the suggestion of Mr. Allen, a slight alteration was made in the wording of the motion in order to extend the scope of the inquiry, and it was then carried unanimously.

After the report of the General Purposes Committee had been considered, resolutions were passed authorising proceedings to be taken in several cases.

LONDON ORPHAN ASYLUM ELECTION.

Reference was made at the Council meeting to the effort being made to secure the election of Elizabeth Kirkby, a daughter of a lady who was the recipient of a grant from the Benevolent Fund, and we call attention to this case in the hope that members who have votes may give them in favour of this candidate.

ANNOTATIONS.

The Reception of Our Special Issue has more than justified the labour and thought expended in its production, for from all sides expressions of gratifying approval have been received. That number of the Journal alone has enormously enhanced the value of the Society's property, and those who see in progressive improvement nothing but an advance along the path that leads to destruction should at last begin to realise the untenableness of their position. In spite of the extra space devoted to matters of scientific, technical, and business interest last week, many interesting communications were unavoidably crowded out. Friends who assisted, however, in accumulating more than could be digested at one meal are requested not to weary in well-doing because a slight postponement of their contributions was necessitated. At the same time, the indulgence of readers generally is bespoken, if exceptional pressure on occasion leads to the publication later of information that would have appeared fresher in an earlier issue. It will be noted that extra space has been necessitated this week to enable us to publish all the reports received.

Information of Value and Interest is often worthy of record, even though its pristine freshness has long faded. This fact is patent to everyone connected with the press, and to none more than those who prepare abstracts and "dress up" paragraphs from other papers for re-publication in their own. With regret it must be added that due credit is not invariably given to the founts of inspiration. The contributors of science notes to some of the London dailies are persistent offenders in this respect, more than one having taken information bodily from our pages without reference to the fact, whilst other journals appear particularly fond of appropriating our translations as their own. Many American periodicals, again, are notorious for the discrimination they display in adapting articles and paragraphs in other papers and for the facility with which they dovetail them amongst their own "original" matter. Our trade contemporaries on this side the Atlantic are, as a rule, commendably free from this poaching instinct, and the instance of lack of acknowledgment referred to by a correspondent this week (see p. 504) was doubtless due to inadvertence. The subject of Mr. Hooper's communication, published in our pages eleven months ago, is one of great commercial importance, and in spite of the considerable time that has elapsed since the original publication, we feel with our esteemed and up-to-date contemporary that the value and interest of the matter render it fully worthy of record in another place, as well as in the *Pharmaceutical Journal*.

"Practical Radiography" is the title of a short series of articles by an expert, that will commence in the Journal shortly. It had been arranged to begin the series last week, but on consideration it was found desirable to devote a little more time to preparing and illustrating the matter. The articles will deal with the whole subject as fully as seems necessary to make it clear, both from the scientific and practical points of view. Every pharmacist ought to be well acquainted with the phenomena brought into prominence through the researches of Lenard and Röntgen, and many will doubtless find it to their advantage to be able to demonstrate the effects of the X-rays to their customers. It is intended, therefore, that the commercial aspect of radiography shall receive as full attention in our pages as any other.

"Chemists and Meat Extracts" is the title of an article—in a journal as conspicuous for its abusive language as for its claim to a monopoly of morality—in which the editor, after commenting upon the worthlessness as nutrients of several prominent meat extracts on the market, proceeds to discuss the position of medical men and pharmacists in relation to those preparations. It is pointed out that to give such products as invalid foods is to put them to improper use, and that in dispelling the prevalent public ignorance on this vital question the chemist has it in his power to do much public service, whilst saving himself a great deal of worry. For, it is argued, the conscientious chemist, acquainted with the composition of these preparations, must feel, when he sees some person who can ill afford the extravagance enter his shop and ask for one of them, that it is "a shame so much good money should be paid for such a food." It is undoubtedly a "nice question in ethics" if it is the chemist's duty to ask if such a preparation is for a sick person and enlighten the purchaser, or say nothing and let things take their chance, for it is to be feared that the public would appreciate the well-meant interference so little that the net result to the chemist would be loss of a customer. And as things are at present constituted even the chemist cannot exist on conscientious scruples. Probably every chemist and druggist in business has demonstrated for himself the inadvisability of such interference as is suggested, and on the whole the reasons advanced by our contemporary for committing business suicide do not appear sufficiently convincing.

Substitution, or the recommendation of another preparation in place of that asked for, may be justified in some cases, but to recommend one meat extract—possibly of varying and therefore uncertain composition—in preference to another that a customer asks for, would have the effect of constituting the retailer a special pleader on behalf of those—the makers—who do not go out of their way to assist him, and he would thus become neither more nor less than an advertising machine. The chemist has suffered too much for his advocacy of proprietary articles in time past, and it may well be left to manufacturers to recommend their preparations by well-known methods. If the preparation for which this hyper-ethical editor is so ardent an advocate be all that he claims for it, there is an enormous demand for such an article awaiting supply, and nothing that the chemist and druggist can do or abstain from doing is likely to affect the ultimate result. Therefore, plausible arguments and appeals to conscience and sympathy notwithstanding, our readers are advised to adopt a policy of non-interference, except in cases where they feel very sure indeed of their ground.

The Poor Law Officers' Superannuation Act, 1896, secures the certainty of superannuation, under certain conditions, to officers and servants in the service of Poor Law authorities in England and Wales, and thus affects a hundred and fifteen dispensers engaged in the Poor Law service. In future all such officers and servants will be appointed subject to the conditions of the Act, but existing officers and servants are at liberty to choose whether or not they intend to avail themselves of the provisions of the Act, though they must decide before December 30. The effect of the Act is to entitle those appointed subject to its conditions to claim a superannuation allowance, whereas heretofore the granting of an allowance was a matter left to the discretion of Poor Law authorities. Henceforth, however, subject to an annual contribution of 2 to 3 per cent. of his salary, according to the length of time he has been in the service of Poor Law authorities, a dispenser will be entitled to receive an allowance—in respect

of every completed year of service up to forty—of one-sixtieth of the average of his salary during the five years preceding his cessation of work. The conditions are that he must have become incapable of discharging the duties of his position by reason of permanent infirmity of mind or body, or of old age, (minimum, 60 years); or he must have attained the full age of 60 and have completed an aggregate service of 40 years under one or more Poor Law authorities in England or Wales; or, lastly, he must have attained the full age of 65 years. The maximum superannuation allowance under the Act will be equivalent to two-thirds the average amount of salary during the five years ending on the quarter day immediately preceding the day on which the dispenser or other officer ceases work, and, of course, cannot be secured until the completion of forty years of service. The allowances will be chargeable upon the common funds of Poor Law Unions, and one more link is thus forged in the chain which is to secure the long-suffering ratepayer in what Herbert Spencer terms the "Coming Slavery." Nevertheless, pharmacists generally should rejoice that the members of a hard-working section of their class are now likely to be secured against the risk of privation in their old age.

Reference to Provision for Old Age reminds us that a meeting for the election of three annuitants on the Pharmaceutical Society's Benevolent Fund will be held at 17, Bloomsbury Square, W.C., on Tuesday next, December 8, at 12 o'clock precisely. There are four approved candidates on the list, and it is difficult to say which case has the most pathetic tale to recommend it to the sympathies of electors. But only three can be permanently assisted for the present, though the fourth will doubtless succeed on the next occasion and not be neglected in the meantime. Attention is now directed to the matter as a reminder to all sympathisers that any subscriptions received on or before the day of election will entitle the subscriber to votes on the present occasion. Everyone anxious to secure the election of any particular candidate should therefore bear in mind the fact that each additional half-crown contributed by themselves or friends will help to decide the result in the desired direction.

An Evening Meeting of the Society will take place on the same date, and the topics for consideration on the occasion are of direct and practical pharmaceutical interest. Mr. David Howard is entitled to speak authoritatively on the determination of quinine, and Mr. E. M. Holmes may be expected to throw fresh light on problems respecting the source of myrrh and gum arabic that have long awaited solution. The time of meeting is, as usual, eight o'clock, and the chair will be taken by the President, Mr. Walter Hills.

The Naturalist of Cumbrae, David Robertson, LL.D., F.L.S., has passed away at a ripe old age, as botanists and zoologists at home and abroad will regret to learn. In another week the veteran would have attained the age of ninety years, and there are probably few naturalists who have not, during the last forty years, been more or less indebted to him for specimens or for assistance in working out natural history problems. He lived long enough to see the foundation stone of a biological laboratory laid near his residence at Millport. On this undertaking his heart had been set for the last few years, and it is said that his magnificent collection of objects of natural history will be handed over to that institution when finished. Those who cherish his memory could not do better than aid in promoting the success of that institution, while those who had not the pleasure of his acquaintance will find his life history, as recorded in 'The Naturalist of Cumbrae,' most interesting reading.

Mr. Wells' Letter (p. 502), in reference to the matter mentioned in last week's Journal (see page 471), is not calculated to dispel the mist that obscures the affair. It may clear the ground somewhat to state that the Registrar of the Pharmaceutical Society knew nothing of the note to which Mr. Wells takes exception until the publication of the Journal, and that the "full and clear" denial in our pages was in no sense official. The affair would have been altogether too trifling for consideration had not Mr. Wells, as President of the Irish Society, given it an artificial importance, and but for the report of his alleged statements having been sent to the Editor, no attention would have been paid to the matter in these columns. Mr. Bremridge has so far received no communication from Mr. Wells, but he informs us that he considers the denial in his reply to a letter received from the Registrar of the Irish Society sufficiently ample. Why, in that case, Mr. Wells should have spoken as now reported (see p. 498), assuming the report to be correct, altogether passes comprehension.

Curiosities of Indian Materia Medica.—In a remarkable work on Hindu medicine lately written by a Fellow of the Royal College of Physicians of Edinburgh, who is also the Raja of Gondal, there is a statement that "the materia medica of the Hindus is a marvel to the modern investigator," and though the writer of a review in the *Times*—taking the statement perhaps too literally—doubts whether he may go so far with his Highness, there is certainly some element of the marvellous in many of the remedies employed in India. It is curious to learn that two thousand years ago cobwebs were used for cut fingers, and leeches were applied in the same manner as at the present day. The use of the common household fly as an emetic is more novel to Europeans, but it is said to be marvellously effective.

The Horse Chestnut as Food for Cattle.—The *Gardener's Chronicle* draws attention to a paper on the nutritive value of horse chestnuts, by M. Paul Gay, in which he shows that they possess an alimentary value at least three times that of the richest forage beet-roots. They are readily eaten by cattle and do not leave any injurious influence upon the richness or quality of milk. Calves feed on the milk without unpleasant results, but pigs show a marked dislike to horse chestnuts. Hitherto popular prejudice has been opposed to the use of horse chestnuts for feeding stock, and they have been supposed to produce poisonous effects, but the question whether there is any real ground for that opinion appears to be worth investigation.

"Recent Researches in Commercial Fibres" served Dr. Morris, C.M.G., Assistant Director of the Royal Gardens, Kew, as a text on Monday last, when he delivered a Travers Lecture. In view of the considerable interest taken at the present time in "China Grass" and "Ramie," those fibres were particularly dealt with. They have hitherto been regarded as at once the most attractive and elusive of fibres, and have not only raised the greatest expectations, but led to the most lamentable failures. Now, however, as the result of efforts extending over fifty years, these fibres are at last being utilised in this country in the manufacture of textile fabrics of a high order. The "China Grass" is a native of China, and suitable for cultivation in warm, temperate climates; while "Rhea," or "Ramie," is suitable only for tropical countries. Remunerative crops can only be grown in well-drained soils of an exceptional character, and a plentiful rainfall well distributed over the year is essential, as well as a high and uniform temperature. Under such conditions crops of stems weighing fifteen to twenty

tons per acre can be produced in the year. The cultivation is recommended as likely to be advantageous in some parts of the West Indies. When completely cleaned, the fibre is capable of being used for the finest lace as well as for canvas and sail-cloth. In fact, the industrial application of this beautiful fibre is calculated to prove of the greatest service in the manufacture of textile fabrics of all kinds.

The Royal Society held its anniversary on St. Andrew's day, Monday last, as usual, the customary address being delivered by Sir Joseph Lister, who summarised the results of the year's work in science, devoting special attention to the investigations of the latest recipients of the Society's medals. The medals were afterwards presented in due form, and the election of officers and Council for the ensuing year then took place, with the following results:—President—Sir Joseph Lister, Bart., F.R.C.S., D.C.L.; Treasurer—Sir John Evans, K.C.B., D.C.L., LL.D.; Secretaries—Professor Michael Foster, M.A., M.D.; Professor Arthur Wm. Rücker, M.A.; Foreign Secretary—Edward Frankland, D.C.L., LL.D.; Other members of the Council—Professor William Grylls Adams, M.A.; Professor Thomas Clifford-Allbutt, M.D.; Professor Robert Bellamy Clifton, M.A.; William Turner Thiselton Dyer, C.M.G.; Professor James Alfred Ewing, M.A.; Lazarus Fletcher, M.A.; Walter Holbrook Gaskell, M.D.; Professor Alfred George Greenhill, M.A.; William Huggins, D.C.L.; Professor Charles Lapworth, LL.D.; Major Percy Alexander MacMahon, R.A.; Professor Raphael Meldola, F.C.S.; Professor William Ramsay, Ph.D. The Lord Walsingham, M.A.; Professor Walter Frank Raphael Weldon, M.A.; Admiral William James Lloyd Warton, C.B. In the evening the Fellows and their friends dined together at the Whitehall Rooms, where there was a most distinguished gathering.

A Flora of Russia is being taken in hand by the Imperial Natural History Society of St. Petersburg, according to a *Daily News* correspondent. An appeal is to be sent to all institutions and persons occupied with the study of botany to assist in the work. The flora of European Russia will be published first, and followed in time by those of Asiatic Russia and the Caucasus, the material being acquired from voluntary workers, who will receive the book gratis when published as remuneration for their trouble. What copies remain will be sold in the book trade, and the Imperial Society hopes that the undertaking will meet with support and encouragement because of its eminently scientific importance.

Professor E. B. Shuttleworth, an old Yorkshireman, who has for more than twenty-eight years ably occupied the editorial chair of the *Canadian Pharmaceutical Journal*, has at last resigned in favour of Mr. G. E. Gibbard, President of the Ontario Society of Retail Druggists, to whom he has also disposed of his financial interest in the concern. The reasons for this course are the pressure on Dr. Shuttleworth's time caused by his professional engagements at Trinity Medical College and the Ontario Medical College. In addition, he is analyst and bacteriologist to the City of Toronto, besides being engaged in private analytical work. Mr. Gibbard is specially recommended by his predecessor as a smart, shrewd business man, capable of developing the journal so as to serve the interests of retail druggists satisfactorily from a commercial point of view, as well as it has in the past ministered to the scientific needs of pharmacy. In this new departure we cordially wish our Canadian contemporary the best of good-luck.

LITERARY NOTES.

'The Journal of Physical Chemistry,' of which the first number has recently been published at Cornell University, ought to have a useful future before it, as it undoubtedly fills an important gap in the ranks of existing scientific papers. Chief amongst the contents of this number are the following articles:—"On Irreversible Cells," by A. E. Taylor; "Chemistry and its Laws," by F. Wald; and "On Ternary Mixtures, II.," by Wilder D. Bancroft. A promised article by Professor J. H. van't Hoff is postponed, but there are excellent reviews of several important works and summaries of recent researches in physical chemistry. The new journal will appoar every month, except July, August, and September, each issue consisting of forty-eight to sixty-four pages; the subscription price is ten shillings per annum, and the London publishers are Messrs. Gay and Bird, 22, Bedford Street, Strand, W.C.

'Knowledge,' the now old-established illustrated magazine of science, literature, and art, appears to be thriving, and as a consequence interesting developments in its pages are promised for the new year. With the January number will be commenced a series of illustrated papers on the progress of science during the Queen's reign, the aid of leading men in the various branches of science having been enlisted for this purpose. A series of illustrated articles on practical entomology, by Mr. Frederick Enock, is also promised; another on the vegetable products of our Australasian Colonies, by Mr. W. Botting Hemsley; whilst in the natural sciences many valuable papers may be looked for from both old and new contributors. Altogether a most attractive programme, and well calculated to maintain the prestige of the journal which takes for its motto the words "Simply worded—exactly described."

'The Chemists' and Druggists' Diary' for 1897 is as useful a publication as ever, though it retains the old faults that trouble irascible individuals who like to have a diary that can conveniently be used as a diary, and not chiefly as a ready (or unready) reference to advertisements. The literary contents of the volume are also most difficult to find, the proverbial needle in a hay-stack being as nothing to it. But these faults are doubtless advantages from the advertiser's point of view, and the publishers should reap the benefit accordingly.

Fischer's 'Kalender für Apotheker' is a much more practical book, and any English publisher who would produce a similar article ought to profit himself exceedingly, besides providing British pharmacists with a necessity of existence. Here, in the space of 5¾ by 3¾ by ⅝ inch, we have a calendar, a diary with ample space for noting each day's events on excellent writing paper, particulars of German pharmaceutical associations, and explanatory lists and tables concerning all the thousand and one things a pharmacist may at any time require information about. In all, there are 176 pages of such useful information, and a loop for a pencil makes this compilation by Apotheker M. Beer even more complete than might be expected at the price—two shillings. It is published by H. Kornfeld, Fischer's medicinische Buchhandlung, Berlin, V.W. 6.

'Cycling as a Cause of Heart Disease' is the title of a pamphlet by Dr. George Herschell (London: Baillière, Tindall and Cox, 1s.), in which the dangers incurred by the novice and the trained cyclist respectively are treated of at length. That great risks may be incurred in this direction is notorious, and attention may profitably be directed by cyclists to Dr. Herschell's exposition.

DINNER OF SCOTTISH PHARMACISTS.

The members of the Pharmaceutical Society resident in Scotland held a dinner in the large hall of the Society's House, 36, York Place, Edinburgh, on Thursday, November 26. Mr. J. L. Ewing, Chairman of the Executive, occupied the chair, whilst Mr. W. L. Currie, Glasgow, Vice-Chairman of Executive, and Mr. J. Bowman Leith, President of the Edinburgh District Chemists' Trade Association, officiated as croupiers. This was the first occasion on which the members had dined in their own house, and the experiment proved most successful. The walls of the hall were adorned with the portraits of distinguished Scottish pharmacists, and the tables were admirably arranged under the superintendence of the Assistant-Secretary, and decorated with flowers from the conservatories of Mr. Buchanan, of Messrs. Duncan, Flockhart and Co.

After an excellent dinner, which was well served, the Chairman proposed the loyal and patriotic toasts, which were duly honoured, Colonel Storrar, Kirkcaldy, responding for the "Navy, Army, and Volunteers."

"THE PHARMACEUTICAL SOCIETY."

Mr. W. L. Currie then proposed the toast of "The Pharmaceutical Society," and in doing so said the Society had done very much to advance the cause of pharmacy in Great Britain during the last twenty-six years, but he did not think it had done all that it ought to have done. He thought the Council did not show to the body at large that it had the welfare of members throughout the whole country truly at heart. They sat in council in Bloomsbury Square and talked very large, and they said there was an amendment on the Pharmacy Acts being propounded; but that amendment was very long in coming. In the Pharmacy Act of 1868 the title "chemist" was protected, and he failed to see why the Pharmaceutical Council did not enforce that protection. He thought the Council ought to put a bold front on what was expected of it, and should come before Parliament with some measure which would meet with general acceptance by the whole trade throughout the country. In return the Council ought, of course, to receive the unanimous support of chemists and druggists throughout the kingdom. Those who were not associated with the Pharmaceutical Society remained outside and said that the Pharmaceutical Society never had done anything for them, but it had done a great deal. The question now was, what could they do for the Society? He coupled with the toast the name of his friend Mr. Storrar, a member of the Council for a good many years.

Mr. Storrar, in replying, said he was quite sure he expressed the feelings of his good friend and colleague Mr. Johnston when he said they felt it an honour and privilege to represent Scottish pharmacy in the Pharmaceutical Council, and they were grateful for the confidence placed in them. He used to think, like Mr. Currie, that the Council of the Society rather shirked its work and could do almost anything it liked. But experience had taught him somewhat differently; it had shown him that the Council could do practically very little so long as the trade outside the Society met it on every hand unsympathetically. For that reason and many others he was rather inclined to think and advocate seriously that the rule which had been applied to the examiners—which disqualified a man from sitting on the Examination Board for more than four years at a stretch—ought to be extended to the Council. He honestly believed that no society ever flourished that allowed its office bearers to become stereotyped, and he thought that in the interest of the Society the honours and the work should go round. He was certain that whenever a man had been in office of any kind in a society he always afterwards had a greater knowledge of the methods and aims of the society, and took greater interest in its work. He was glad to think that at the present moment the Scottish pharmacists are more loyal to the Society than ever they were. This was just as it should be. He hoped the feeling would go on and increase; at no time, he believed, was there more necessity for union than at present in their ranks. He believed that a thoroughly competent pharmacist could hold his own to-day as well as at any other time, but at the same time there was no doubt they required union in their ranks at the present moment.

"THE GLASGOW ASSOCIATION."

Mr. Charles Kerr next proposed "The Glasgow and West of Scotland Pharmaceutical Association." He believed it was flourishing, and they could do nothing better than wish it success.

Mr. McKellar, in reply, said the Association was rather looked upon as a young body—very active and aspiring. But Glasgow had had an association for fifty years, and like most associations it had had its ups and downs. Latterly perhaps they had not been quite so radical—they had been able to see things a little more clearly, but in Glasgow they suffered from the very worst phase of pharmacy, and as a result they were apt to become soured very much.

"THE NORTH BRITISH BRANCH."

Mr. J. T. Tocher, Aberdeen, proposed "The North British Branch and the Boards of Examiners." He conceded that to be a pharmacist in Edinburgh—a resident in Edinburgh—as Mr. Ewing, their able Chairman, and many of the Executive and the Board were, was to occupy an enviable position. A feeling akin to pride arose when he thought that there in that historic city—their ancient Scottish capital—an able man, a conspicuously able man he had proved himself to be, came and laid down his charge and delivered those weighty words which rang through the Empire and led captive the admiration of all parties in the State. If they might judge by public utterances, they might well be proud of the character of their leading statesman, and he was sure that when the day came when their little grievances were laid before the Legislature for adjustment, their claims would be fully and fairly considered and intelligently handled, and the blame would not be with men like Lord Rosebery if they failed to obtain just legislation. He coupled with the toast the name of Mr. Ewing, the able and highly respected Chairman of both the Branch and of the Board of Examiners.

The Chairman, in reply, said he was very much indebted to Mr. Tocher for the admirable speech in which he proposed the toast, and he would like to say also for the services he had rendered to the Pharmaceutical Society in Aberdeenshire. He would take the last part of the toast first, and with regard to the Scottish Board, he said they had lost from its personnel one whom they all respected. They regretted the resignation of Prof. Geddes, whose ambition to serve an oppressed people in the East had taken him away from the duties of his profession. Mr. Boa and Mr. Jack, of Arbroath, both able and efficient examiners had retired, but he hoped they would soon have them again discharging the duties of examiners. He was glad to say that they had nominated to the vacancy caused by Professor Geddes' resignation the Regius Professor of Botany in the University of Edinburgh, Professor Balfour. The other two vacancies had been filled by Mr. Maben and Mr. Davidson, of Montrose. The North British Branch of the Society, he thought, was at present in as flourishing and strong a position as ever it was, and he was bound to say he did not think it was ever more loyal to the Pharmaceutical Society than at present. He asked them to remember that this was the first occasion on which they had dined in their own house, and he hoped it was the beginning of many happy evenings there, evenings which would tend to promote good-fellowship among the members of the craft in this country.

OTHER TOASTS.

Mr. W. R. Kermath proposed "The Edinburgh District Chemists' Trade Association," and Mr. Bowman, in reply, said in the five years of its existence the Association had been able to do a little for the interests of the trade of chemists and druggists.

Mr. D. McLaren gave "The Edinburgh Chemists', Assistants', and Apprentices' Association," referring to the fact that it had been in existence for eighteen years. He coupled with the toast the name of Mr. G. Sinclair, its energetic Secretary. Mr. Sinclair, in replying, spoke of the mutual benefits which members of the Pharmaceutical Society and the Assistants' Association enjoyed from each other.

Mr. Thomas Maben submitted the toast of "The Chairman," and Mr. Ewing, in reply, thanked them for the way in which the toast had been received. If he had earned the esteem of his fellow-craftsmen he felt that he was rewarded for anything he had done.

Mr. Peter Boa, in proposing "Mr. Rutherford Hill's health," said he believed the very pleasant evening they had spent was largely due to his efforts. Mr. Hill having briefly replied,

Mr. G. Lunan proposed "The Croupiers," to which Mr. W. L. Currie and Mr. J. Bowman responded.

During the evening songs were rendered by Messrs. T. Thompson, J. Bowman, Jun., W. L. Currie, G. H. C. Rowlands, W. Duncan, and R. Butchart, Mr. Shedden acting as accompanist, and at the close the company sang "Auld Lang Syne" with great gusto.

NOTTINGHAM AND NOTTS CHEMISTS' ASSOCIATION.

The Nottingham and Notts. Chemists' Association has held a general meeting in the Masonic Hall, Nottingham, for the purpose of discussing current pharmaceutical topics, and the present position of the P.A.T.A. The chair was occupied by Mr. A. Middleton, Vice-President of the Association, and there were also present: Messrs. B. Adams, C. A. Bolton, A. E. Beilby, R. Beverley, S. Cook, A. Eberlin (hon.-sec.), E. Gascoigne, F. Lumby, F. R Sergeant, C. W. Warrener, R. Widdowson, etc. In a few introductory remarks the Chairman said he had reason to know that the Pharmaceutical Society had for more than two years been engaged in making strong representations to various government departments on the subject of the "Companies Acts." They had secured the help of representatives of the medical, dental, and veterinary professions, and thus united they went to the Board of Trade last session urging the fact that one law (The Companies Act) was capable of being used, and was used, to render void the provisions of another law (The Pharmacy Act) which the Legislature in 1868 declared was necessary for the preservation of the public safety, and asking that the Government would see its way clear to remedy this great defect in the Companies Act. In the Bill which Earl Dudley (Parliamentary Secretary to the Board of Trade) introduced into the House of Lords, however, no remedial clause appeared, and they then went to certain Members of the House of Lords to see if it were not possible to insert an amending clause to suit their wishes. It was within the knowledge of them all that the amendment was not considered, as the Bill was referred to a Select Committee, which, by the way, was unable to report before the House rose in August. It was now expected that the whole business would commence afresh in January, and if they as a body wished the Society to continue its efforts in their behalf, surely they ought to give expression to their wishes in a practical manner by joining and loyally supporting the Society. Union and co-operation were absolutely necessary to their success, and without it no amount of discussion, on either Parliamentary, legal, or pharmaceutical subjects, could be of the remotest utility. "Camwal" was an illustration of what chemists could do by co-operation, and was it to be supposed that success would attend mineral water making only? The keynote of the whole situation was unity, and until they got this, and fully three-fourths of the names on the Register as active members of the Society, it was useless to expect an ideal Pharmacy Act or to keep indulging in bitter reproaches against a "hard-hearted Legislature."—A discussion ensued, in which feeling was generally expressed that something was necessary to prevent a limited liability company from doing that which was illegal for one person to do, and it was hoped that the Pharmaceutical Society might succeed in getting a clause inserted in the new Act to prevent this. A very satisfactory feeling was expressed on the condition of the Proprietary Articles Trade Association, and several new members joined, the following resolution being also passed:—

> "That this meeting of Nottingham chemists expresses its appreciation of the able manner in which Mr. Glyn-Jones has worked in the interests of the trade, as Secretary of the Proprietary Articles Trade Association, and pledges itself to do its utmost to induce the chemists of the town to join the Association."

During the evening mention was made of the unsatisfactory condition of the Food and Drugs Act, and after references to the new B.P. and new Pharmacy Act, the meeting closed.

BRADFORD AND DISTRICT CHEMISTS' ASSOCIATION.

The usual fortnightly meeting of this Association was held at Leuchter's Rooms, Darley Street, on Tuesday, December 1, Mr. Geo. Rimmington in the chair.

There was a good attendance of chemists.

Mr. Silson introduced the subject of "Dispensing by Doctors." He spoke in favour of the present condition of affairs, pointing out the advantages it possessed for the doctor, the patient, and the chemist. The two great obstacles to Mr. Silson seemed to be the case of country practitioners and poor patients.

Mr. Dunn had the opposition, and moved the following resolution:—

> "That in the opinion of this meeting of the Bradford and District Chemists' Association the dispensing of prescriptions should, as far as practicable, be placed in the hands of qualified chemists."

In support of his resolution he made a very able speech, claiming that the doctor by his education was not trained to dispense, whilst the chemist was, and also that the busy doctor after a hard round was very liable to make mistakes in dispensing, which, if made in writing a prescription, would be checked and detected by the chemist. The dispensing by grooms, maid servants, and other inexperienced helps, and the inapplicability of the Food and Drugs Act to doctors' stocks were also mentioned as objections to habitual dispensing by doctors. Mr. Dunn next spoke of the repetition of prescriptions and prescribing by chemists, both of which practices he condemned, and thought chemists would be willing to give up if the medical profession gave up dispensing.

Mr. A. H. Waddington seconded Mr. Dunn's resolution, which was spoken to by several other gentlemen. After Mr. Dunn and Mr. Silson had replied, the resolution was carried with only one opponent.

PHARMACEUTICAL SOCIETY OF IRELAND.

Mr. WELLS ON PHARMACEUTICAL QUALIFICATIONS.

Speaking a few evenings ago at Dublin on the qualification of the Irish pharmacist, Mr. W. F. Wells, President of the Pharmaceutical Society of Ireland, referred to the statement made recently in *Truth* that an Irish apothecary's qualification is not recognised in England, because of the Irish examination being an insufficient test for dispensing work, and that consequently the English Society does not recognise licentiates of the Irish Pharmaceutical Society. Mr. Wells said that as far as the question of recognising qualification went there was no reciprocity between Ireland and Great Britain. In the first place the Irish Act—the Pharmacy Act of 1875—was entirely distinct from the English Act, and applied only to Ireland. In Ireland they did not recognise the licentiates of the English Pharmaceutical Society. Nor on the other hand did the English recognise the Irish qualification. If the apothecary mentioned in *Truth* read the Irish Act or applied to the Society, he would have learned that he could not open a shop in England. As a matter of fact here in Ireland two English licentiates have been prosecuted by the Irish Society and another has been threatened with legal proceedings. The Pharmaceutical Council understands that there is no reciprocity, not that they would not give it, but that the English and Irish Societies are powerless to give it. The qualifications of dispensing chemists in Great Britain and those in Ireland are regulated by separate Acts of Parliament, and a chemist qualified to practise in Great Britain is no more at liberty to practise in Ireland than an Irishman to practise in Great Britain. The Pharmaceutical Society of Ireland insists upon chemists and druggists passing its examination before opening business here; so that it is a case of diamond cut diamond. The act under which the English Society grants qualifications is the Pharmacy Act, 1868, and it applies to Great Britain only; that under which the Irish Society grants them is the Pharmacy Act (Ireland), 1875, which applies to Ireland only. In Great Britain there are Major and Minor qualifications. The great bulk of those registered and qualified in England are chemists and druggists who have passed the Minor examination, a much less severe test to that which pharmaceutical chemists in Ireland are subjected to, and only about one in ten, or even less than that proportion, has the Major qualification, which gives a better status, but no manner of professional advantage, as the man who passes the Minor examination can dispense and carry on as good a business as his friend who undergoes a more advanced test in the same subjects. In Ireland no man is permitted to dispense medicines with so slight a qualifying knowledge as secures the English Minor or chemists' and druggists' qualification. The subjects named in both countries are the same. Mr. Wells said that the statement contained in *Truth*, if made at all, was made by some unauthorised person. He was of opinion that the statement would not have been made by the Registrar of the English Society, for the reasons already stated. The Irish examination was an intermediate one between the English "Minor" and "Major," and he had it on the authority of gentlemen who had passed both that the Irish examination was the stiffer one. From time to time the examination had been made even stiffer, and it was now a thorough test of what was required, and any man having the Irish qualification was competent to dispense medicine for anybody. As to the point made out of the "druggists' examination," Mr. Wells said that this examination simply qualifies a man to sell poison, and does not give him the power of dispensing medicines. The broad fact remained that on the whole the Irish qualification is the superior article.

CHEMISTS' ASSISTANTS' ASSOCIATION.

At the meeting held on November 26 the President, Mr. C. Morley took the chair, and a lecture was given by Mr. J. R. Jackson, A.L.S., Curator of the Museum, Royal Gardens, Kew. This was illustrated by a large number of specimens and photographs.

"Palms and their Products."

Mr. Jackson prefaced his lecture, a report of which appears at page 483, by explaining that at Kew every known vegetable product was dealt with, application for advice being received concerning the name, origin, and utility of products collected by geographers and even Egyptologists. The latter sometimes sent fragments of woods and fruits which had lost all trace of cellular structure, and crumbled to dust on being pressed. A large amount of work was done for the merchants of London and Liverpool in finding out the precise properties of oil seeds, more particularly as to whether they are poisonous, so that purchasers may be on their guard as to the use of the marc or residue for cattle feeding. Even at Kew, however, mistakes were sometimes made. For example, some seeds of the mesquit bean of Arizona, a useful forage plant, were obtained and propagated at Kew. By some error seeds propagated from an allied poisonous species were distributed to various colonial stations, with the result that many horses and neat cattle were poisoned.

The lecturer concluded by handing round specimens of raw fibres and articles manufactured from palms, giving in each case a brief account of their origin, methods of preparation, etc. He showed a large number of coco-nut products, the dried sliced kernel known in commerce as copra, used for expressing the oil, boxes turned from the trunk of the tree, three varieties of coco-nut fibre of different colour and texture derived from distinct geographical sources.

At the conclusion of the lecture a vote of thanks was proposed by Mr. George Roe, seconded by Mr. R. Glode Guyer and carried.

LIVERPOOL PHARMACEUTICAL STUDENTS' SOCIETY.

At a meeting of this Society, held in the University College on Thursday evening, November 26, the President, Mr. J. Jones, in the chair, several practical communications were contributed by members.

Precipitation of Quinine by Liq. Ammon. Acet.

Mr. T. S. Wokes produced a prescription running as follows:—

℞ Ferri et Quin. Cit.	gr. xl.
Liq. Ammon. Acet.	f.℥iss.
Syrupi Aurantii	℥ii.
Aqua ad.	℥vi.

Misce fiat mistura. Sumat ℥ss. ter die.

This had given a precipitate of quinine on the addition of the liq. ammon. acet., evidently because the liquor was alkaline. The addition of acetic acid in slight excess remedied the matter. Mr. Cowley had often observed that the acetic acids sent out by wholesale houses as of B.P. strength were anything but of the right saturating power; consequently a liquor made with such acids would, of course, be alkaline. The difficulty in making a neutral liq. ammon. acetatis consisted in getting rid of the dissolved CO_2, Mr. Wyatt said, and as an evidence of neutrality he preferred tincture of cochineal, which was not affected by CO_2 as litmus was. The liq. plumbi subacet. and the neutral acetate of lead, as advised by Barnard S. Proctor in his manual of 'Pharmaceutical Testing,' were also, when used according to the directions there given, of much value in getting a neutral solution. A little excess of acetic acid is better than excess of ammonia, broadly speaking, particularly where the liquor is prescribed in collyria.

Gymnema Sylvestre.

Mr. Prosper H. Marsden, F.C.S., showed a specimen of the *Gymnema sylvestre*, natural order Asclepiadaceæ, which had been brought from Algeria by a medical friend of his. It is a native of India, where it is used as a remedy against snake bites, and has the property of temporarily causing a numbness of the palate when chewed. This was first remarked by Edgeworth, and a subsequent examination of the plant by D. Hooper showed that this was due to the potassium salt of gymnemic acid, which occurs generally in other species of *Gymnema*, and which, according to Quirini ('Year-Book,' 1892, page 184), in a ½ per cent. weak alcoholic solution is useful for washing out the mouth before taking nauseous medicines. In doses of ·3 to ·4 gramme gymnemic acid is an emetic. See also *Pharmaceutical Journal* [3], vii., p. 551, and *Nature*, 1886–7, Dyer.

The Henna Plant.

The dried Henna plant *Lawsonia inermis*, L., natural order Lythraceæ, was also exhibited, as used by the Eastern women to dye their nails, feet, and hands. It is said to be the camphire of the Scriptures. In France it is used by ladies to dye their hair the rich reddish-brown recently so fashionable, so the members were told by Mr. Wyatt, who had sold it for that purpose when there.

Incompatability of Cocaine and Borax.

Mr. H. S. Peirson, whilst making a throat wash of borax and cocaine hydrochlorate, noticed that the cocaine came out, and as this was brought about by the borax being alkaline, he added enough boric acid to re-dissolve the precipitate, so turning out a satisfactory gargle. In the opinion of the members, this was quite justifiable under the circumstances, and Mr. Mitchell reminded them of a similar difficulty he had brought up at a meeting some two years past.

The Romance of a Chymist's Shop.

The lecturer of the evening, Mr. Charles Sharp, F.L.S., an old friend of the students, then delivered an address on "The Romance of a Chymist's Shop," the particular shop indicated being that of which a model stands in the Museum of the Pharmaceutical Society, London—a Chinese native shop in Canton. Around the life of the imaginary proprietor of this celestial pharmacy—one Ching Lee—Mr. Sharp wove a romance which kept his hearers entranced by its alternating moods of humour and pathos for the rest of the evening, and at the conclusion left them with something more to think of than the mere dry routine and daily round of at times very irksome duty within the four walls of their own unromantic shops. A vote of thanks, proposed by Mr. Wardleworth in a neatly turned speech, and seconded by Mr. Cowley, was passed to Mr. Sharp for his kindness in once again coming to give what the students look forward to in the light of an intellectual treat.

Alterations in Programme.

The Secretary of the Association wishes to draw attention to the following unavoidable alterations in the programme for the session 1896-7:—December 17 and 31, papers cancelled; 1897, January 14, annual dinner; March 14, "Analysis of Fatty Oils," by R. C. Cowley, Ph. Ch.

MIDLAND PHARMACEUTICAL ASSOCIATION.

At a trade meeting held at the Grand Hotel, Birmingham, on Tuesday, November 24, 1896, letters of apology were received from the President, Mr. F. T. Gibson, and the Secretary, Mr. C. F. Jarvis. The following were present:—Messrs. H. Hutton, A. Waldron, J. R. Barret (of Leamington), Mr. A. C. Weaver (Wolverhampton), Messrs. C. Thompson, J. Wakefield, F. W. Richards, J. Poole, F. J. Gibson, F. H. Alcock, J. Barclay, J. A. Radford, F. Smith, H. S. Lawton, F. Adam, H. Critchlow, F. H. Prosser, and others.

The following resolution was proposed by Wm. Jones (Chairman), and seconded by J. Wakefield:—

"That this meeting heartily thanks the P.A.T.A. for the success already achieved, and pledges itself to continue to give every possible help to put down the system of cutting, now so prevalent in the trade."

This was carried unanimously.

In reply to a circular issued by Messrs. Rowlands and Sons, the following resolution was proposed by J. R. Barret and seconded by Mr. H. Hutton:—

"That we, the members of the Midland Pharmaceutical Association, ask and recommend Messrs. Rowlands and Sons to join the P.A.T.A., and we agree to give them every encouragement and support upon their doing so."

The Secretary was instructed to send a similar resolution to the following firms:—

Anglo-American Drug Co.	Kay Bros., Ltd.
Burroughs, Wellcome and Co.	Owbridge, F. L.
Thos. Beecham.	Scott and Bonne.
Midland and Lincoln Drug Co.	St. Jacobs Oil.
Evans Sons.	Richardsons (Leicester).
Evans, Lescher and Webb.	White, A. J., Ltd.
Eno.	Woodward.
Holloway.	Wright, Layman and Umney.

The following resolution was also carried:—

"That it be in the power of any Association to put upon the protected list any specialty having a local sale."

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION.

A meeting was held on Wednesday, November 25. The President, Mr. H. S. Lawton, occupied the chair. Five gentlemen were proposed for membership. A paper on the

ASSIMILATION OF FOODS

was then given by Mr. Harry Jessop.

The lecturer, in his opening remarks, said that he had found it necessary to divide his paper into two portions, the first dealing with the kinds of food requisite for the sustenance of life, and the second (which he would read later on in the session) would deal with the assimilation of the same. He explained in a lucid manner the kinds and compositions of foods necessary to meet the requirements of the human body, and pointed out the difficulties of supplying the elements of these foods in suitable proportions.

A hearty vote of thanks having been accorded to the lecturer for his able paper, the meeting then terminated.

FIRST ANNUAL BALL.

The first annual ball will be held at Edgbaston Vestry Hall on Thursday, December 10. Members are requested to obtain any tickets they may require for themselves and friends as soon as possible, from any of the stewards, or the Secretaries, Mr. W. Ernest Meggeson, 62, Gillott Road, and Mr. Ernest Osborne, 137, Broad Street, Birmingham.

NORTH-EAST LANCASHIRE CHEMISTS' ASSOCIATION.

The annual dinner of the North-East Lancashire Chemists' Association was held in Blackburn on Thursday, November 19. After dinner a short musical entertainment was provided, which was thoroughly enjoyed by the members, of whom a goodly number were present. The chair was occupied by Mr. Councillor Critchley. The following toasts were proposed and heartily responded to :—"The Queen and Royal Family," by the Chairman; "Success to Pharmacy," proposed by Mr. J. Hindle, responded to by Mr. Harrison; "The Town and Trade of Blackburn," by Messrs. Holt and Howarth; "The Pharmaceutical Society," by Messrs. Aspinall and Garland; "The North-East Lancashire Association," by Messrs. E. Highton and F. N. Whitehead; "The Lancashire Witches," by Messrs. Baxter and J. S. Eatough; "The Chairman," proposed by Mr. R. L. Gifford and Mr. W. Pickup. The speeches were short and bright, and several useful suggestions were given with regard to the future working of the Association, which the Committee intend acting upon in order to make the meetings as instructive, social, and interesting as possible.

SHEFFIELD MICROSCOPICAL SOCIETY.

At the inaugural meeting of this Society, Mr. Tolputt, L.D.S., occupied the chair, and a lecture was delivered by Mr. F. Harrison, M.R.C.S., on "The New Photography and its Application to Dental Practice." The lecture (being the outcome of a number of experiments carried out in Mr. Harrison's own surgery) was fully illustrated by photographic slides, and proved beyond a doubt the great value of the *x*-rays in diagnosing various forms of dental disease. At the close a hearty vote of thanks was accorded the lecturer on the motion of Mr. George Ellinor, seconded by Mr. G. T. W. Newsholme.

METROPOLITAN COLLEGE OF PHARMACY.

ANNUAL DINNER.

The third annual dinner was held in the Throne Room, Holborn Restaurant, on Saturday, November 28, when about 170 sat down. Mr. Patrick Gardiner presided, and after dinner a varied programme was gone through. The Chairman proposed the toast of "The Metropolitan College of Pharmacy," and Mr. W. Watson Will, the Principal, responded. He spoke of the work done by the students at the examinations, the results being highly satisfactory. Mr. Watson Will concluded by urging upon all the students the necessity for continuing their studies after passing the examinations if they wished to excel in their business. The prizes and certificates were then distributed to the successful students by the Chairman, after which several other toasts were proposed and received with much enthusiasm. The proceedings concluded with the singing of "Auld Lang Syne."

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION.

At a committee meeting held last week, Mr. G. Breeze, J.P., in the chair, and Messrs. C. T. Park, Condy U'Ren (Treasurer), Davey, A. D. Breeze, O. A. Reade, J. B. Swainson, J. Harvey Bailey, Martin Johnson, and James Cocks (Hon. Sec.), being also present, the present of books given by Mr. E. N. Butt, through the Library and Museum Committee of the Pharmaceutical Society, was thankfully accepted. Three new members were elected, Messrs. E. T. Wood, C. Hare, W. H. Mallaband, and Messrs. Newton and Hogan honorary members. A vote of thanks was passed to Mr. Maurice for his generosity and hospitality during our annual Conference. The following Ball Committee was elected :—Messrs. Park, Green, J. D. Turney, W. H. Woods, J. G. Netting, Swainson, J. R. Johnson, A. J. Buckley, Cantle, Martin Johnson, F. Maitland, and James Cocks, the same to be held the early part of January next. It was decided to move into new rooms the early part of January next.

HALIFAX AND DISTRICT CHEMISTS' ASSOCIATION.

A largely attended meeting of this Association took place on Thursday week at their rooms, Halifax, where full arrangements were made for the coming year. The following officers were elected :—President, Mr. J. Bennett Brierley; Vice-Presidents, Messrs. G. M. Cobb, W. C. Hebden, J. Swire, and Jonathan Pollard; Hon. Treasurer, Mr. J. B. Brierley; Hon. Sec. and Librarian, Mr. Herbert W. Seely; Committee, Messrs. Tiffany, Tom Briggs, J. Patchett, C. Cocker, C. Fielding, W. S. Thompson, and Haigh. The annual subscription was fixed at 5*s.*, and includes an excellent repast, followed by a social evening. It was decided that the meetings should be held quarterly, or, at the calling of the Committee, oftener when necessary, and that at such quarterly meetings papers of interest should be read. The opening supper will take place on Wednesday, December 9, in the "Old Hall" of the Old Cock Hotel.

PHARMACEUTICAL FOOTBALL AND CRICKET CLUB.

SMOKING CONCERT.

There were about two hundred present at the smoking concert held in the Crown Room, Holborn Restaurant, on Thursday, November 26, including Mr. Walter Hills (President of the Pharmaceutical Society), Messrs. M. Carteighe, R. Bremridge, C. B. Allen, W. Warren, F. W. Short, J. Ince, T. C. W. Martin, Piere, Professors Greenish and Collie, and a number of other friends of the Club. The chair was taken by Professor J. Reynolds Green, and an excellent programme was rendered, most of the performers being well-known and popular artistes, whose efforts were highly appreciated. At the conclusion of the programme Professor Green said it gave him great pleasure to see so many of the students and their friends present. He was sure they had all spent a most enjoyable evening, and he thought that before they went away they would wish to show their appreciation of the services rendered by the Secretary, Mr. E. A. Umney, in preparing for and carrying out the necessary arrangements by according to him their most hearty thanks. He therefore proposed a vote of thanks to Mr. Umney, which was seconded and carried amid loud and prolonged cheering. Mr. Umney briefly replied. He said the success of the entertainment was largely due to Professor Green, who had taken a great interest in the arrangements. He wished to thank him for the very kind way in which he had assisted in getting up the entertainment. Mr. Fothergill, captain of the Club, and Professor Collie also made a few remarks, and the proceedings terminated with the singing of "Auld Lang Syne" and the National Anthem.

BRIGHTON JUNIOR ASSOCIATION OF PHARMACY.

On Wednesday, November 18, a "musical and social" meeting of this Association took place at the headquarters, Newburgh Hall, Cannon Place. There was a large number of members and friends present, and Mr. E. Histed officiated as Chairman. The programme, which was under the direction of two members of the Committee

(Messrs. E. Beckwith and S. Kent), was admirably sustained by the following gentlemen:—Messrs. Little, E. L. Carter, Geo. Long, H. E. Hedgcock, Brown, Howes, H. G. Price, E. Beckwith, Clutterbuck, J. King, etc. Professor Clutterbuck also contributed a song, whilst Mr. E. A. Hedgcock very kindly officiated at the piano. During the evening light refreshments were served, and altogether a most enjoyable evening was spent. At the conclusion of the programme a vote of thanks to the Chairman was very heartily accorded.

At a meeting held on Wednesday, November 25, there was a full attendance, and amongst the visitors were Mr. Gostling, of Diss (member of the Pharmaceutical Council), Mr. P. M. Short, M.B., Dr. Griffiths, of Haywards Heath, Mr. R. A. Cripps, and others. The chair was taken by Mr. Short, who called upon Mr. Jeeves to open a debate on "counter prescribing."

Mr. Jeeves said counter prescribing, as understood by chemists, generally consisted in the treatment of minor ailments. Some medical men object that the chemist is not in a position to diagnose, but in those simple cases not one out of ten doctors would consider a diagnosis necessary. Judging by results, the decision of the public is in favour of the chemist. It is not reasonable that all chemists should be condemned because there are a few who are foolish enough to go to extremes. There are very few chemists who do not prescribe, and in simple cases of neuralgia, etc., they are quite as capable as the doctor. Finally, if chemists did not prescribe, the medical profession would not benefit, as the public generally will not go to a doctor for simple ailments.

Mr. W. Howes, in his speech for the negative, said that better opportunites for debate would have been afforded had the subject been put in the form of a resolution, but he was astonished that the Association should have brought the subject up for discussion at all, seeing that the question had been relegated to a back-shelf by our forefathers years ago. He was prepared to attack the practice of counter prescribing. Prescribing by chemists was morally wrong. Of course, it is well known that there are people who prefer going to a chemist for advice, but that fact does not mitigate the wrong the chemist does in prescribing. In the case of a sore throat, a chemist would probably not be able to discriminate between an ordinary sore throat arising from cold, a case of diphtheria, or a syphilitic throat, and the harm that might be done by wrong treatment is incalculable.

Dr. Griffiths said it is very difficult for a chemist to differentiate a minor ailment, inasmuch as the symptoms exhibited by the patient are often quite disproportionate to the importance of the case. Chemists should not attempt to do that which they have not been trained to do, for by so doing they risk injury to others, and probably irreparable injury.

Mr. Gostling asked, How could chemists take upon themselves to prescribe when they have had no training for it? If doctors do not diagnose, that is no reason why chemists should prescribe. He thought they would study their own interests a great deal more if they adhered to their own profession, and it would be far best for them to practise pharmacy and stick to it.

Mr. R. A. Cripps said the practice of counter prescribing is without doubt morally wrong, and chemists should leave it alone.

Mr. Jeeves, in reply, said that all the speakers in the negative had dwelt on the exceptional cases. He did not know a single chemist who did not prescribe, and many could not afford to do without it.

Mr. Howes also replied in a brief speech, and was followed by Mr. Short, who, in winding up the debate, said that there was much to be said on both sides. He thought the subject was a most important one to chemists, and he thanked them for the way in which the debate had been conducted.

LEGAL REPORTS.

PROCEEDINGS UNDER THE PHARMACY ACT.

Pharmaceutical Society of Great Britain v. *Pratt.*

At the County Court, Barrow, on November 26th, the Council of the Pharmaceutical Society of Great Britain sued F. J. Pratt, of 5, Cavendish Square, Barrow, for a penalty of £5 for selling poison contrary to the provisions of the Pharmacy Act, 1868.

Mr. T. R. Grey, instructed by Messrs. Flux, Thompson and Flux, appeared for the Society. Mr. Wadeson represented defendant.

In opening the case, Mr. Grey stated that the action was for a penalty of £5 incurred by defendant in selling poison. Defendant was an assistant to the North-Western Drug Stores, Ltd., of Barrow, and acting in that capacity he had sold "Winslow's soothing syrup," which contained morphine. The Act was passed for the safety of the public, and by reference to the Schedule it would be seen that opium and all preparations of opium were poisons within the meaning of the Act. Section 13 made the printed Register evidence, and that defendant's name did not appear therein. Section 15 was the important section dealing with the penalty for selling poison. There were authorities which governed this case. The case of the Pharmaceutical Society *v.* Armson decided that the prohibition in Section 15 against the sale of poison by other than registered chemists was not confined to the sale of the scheduled poisons in their simple state, or of preparations of such poisons, but extended to the sale of a compound containing a scheduled poison as one of its ingredients. Lord Justice Smith in his judgment said "the meaning of that section is that no one but a chemist shall sell poison, and the circumstance that the poison is mixed with other ingredients can make no difference." The case of the Pharmaceutical Society *v.* Wheeldon decides that an unqualified assistant although acting for a qualified employer is liable for penalties under Section 15 if he sells poison. This was a serious case, as defendant only as far back as June last was sued for a penalty for the sale of poison.

Arthur Foulds, examined by Mr. Grey, said: Acting upon instructions received from the Registrar, he went to 5, Cavendish Square. He asked defendant for a bottle of Winslow's soothing syrup, and he served him with the bottle produced. He identified the young man who served him.

Mr. Wadeson: If counsel will allow me to ask a question or two of the person identified it may save time. There seems to have been a miscarriage of justice, as the person identified was named Keeton, and was a registered chemist and druggist.

William Henry Keeton, examined by Mr. Wadeson: I am a registered chemist. I am the person who sold the Winslow's syrup to the witness.

Mr. Grey: Before proceedings were commenced, a letter was sent to defendant. His father wrote for particulars, which were supplied to him, and as the Society's solicitors heard nothing further from defendant or his father, this action had to be commenced.

His Honour: Under these circumstances this action must fail and there must be judgment for the defendant. It is a very important Statute, and the Pharmaceutical Society were only carrying out a public duty, and in this case they have been misled.

PROCEEDINGS IN THE COURT OF APPEAL.

Liebig's Extract of Meat Co., Ltd., v. *Chemists Co-operative Society.*

On Friday, November 20, the action of Liebig's Extract of Meat Co., Ltd., *v.* the Chemists' Co-operative Society, Ltd., came before the Court of Appeal, consisting of the Lord Chief Justice and Lords Justices Lindley and A. L. Smith. The action, in which Mr. Justice Kekewich delivered judgment in July last, was brought by the plaintiff company asking for an injunction to restrain the defendant company, which carries on business at Bradford, from using wrappers so nearly resembling the plaintiffs' as to be calculated to deceive the public, and from passing off, or attempting to pass off, their manufacture as that of the plaintiff company. Mr. Justice Kekewich granted an injunction as asked, and the defendant company now appealed from so much of the order as dealt with the question of wrappers. Mr. Bramwell Davis, Q.C., and Mr. Martelli appeared for the appellants; Mr. Warrington, Q.C., and Mr. Jenkins for the respondents. Mr. Bramwell Davis said he could not appeal from that portion of the judgment which restrained the defendants from passing off their goods, though he did not admit they had done so, but it had been proved that two persons sent by the plaintiffs went to the defendant's place of business and asked for the company's extract, and were supplied with the defendant company's manufacture, in one case, at any rate, by a boy, and his client's case was that it was a mere mistake; but Mr. Justice Kekewich having found against them on the evidence, he could not appeal against his decision with any hope of success. With regard to the wrappers, however, he hoped to convince their Lordships that there was not such similarity as warranted the interference by injunction. The jars and wrappers being produced, their Lordships at once intimated their opinion that there was a close similarity, and, although Mr Davis kept up the argument for a considerable time, the appeal was dismissed with costs without calling on the respondent's counsel.

SOCIETY OF CHEMICAL INDUSTRY.

The first meeting of the Liverpool section of the Society of Chemical Industry for the session was held at University College on Wednesday, November 4, when the chairman (Dr. Charles A. Kohn) gave the opening address on the "Synthesis of Physiologically Active Organic Compounds." Dr. Kohn referred to the important industrial developments of organic chemistry, and said that, from returns supplied from the chief hospitals in the country, he estimated the annual value of the products used in the hospitals at £2300, whilst in the Liverpool districts alone the quantities sold outside the hospitals amounted to a value of £5000 yearly. The total annual consumption in the country Dr. Kohn estimated at not less than £250,000. As these products are practically all made in Germany, he regarded this as due on the one hand to the Government not offering those facilities for the use of duty-free alcohol for chemical industries which obtain abroad, and also to the lack of appreciation of organic chemistry in the chemical works of this country.

OBITUARY.

Foster.—On October 29, Robert Dannatt Foster, Chemist and Druggist, of Burford. Aged 73.

Lumsden.—On November 23, John Lumsden, Chemist and Druggist, of King Edward, Aberdeenshire. Aged 75.

Cartwright.—On November 27, William Bryan Cartwright, Chemist and Druggist, of Stratford. Aged 54.

Goodwin.—On November 23, John Goodwin, Pharmaceutical Chemist, of Lower Clapton, London. Aged 76. Mr. Goodwin carried on business for fifty-two years in the High Road, Lower Clapton, and retired in June last. He had been a member of the Society from 1857, and was a subscriber and generous donor to the Benevolent Fund.

Alexander.—On November 29, William Alexander, Pharmaceutical Chemist, of 2, Manor Road, Twickenham. Age 68. Mr. Alexander was one of the earliest examined Pharmacists, his examination certificate being No. 76.

Audus.—On November 30, William George Audus, Chemist and Druggist, of Edinburgh. Aged 38.

PUBLICATIONS RECEIVED.

Buck's Medical Lexicon: A Vest-pocket Medical Dictionary. By Albert H. Buck, M.D. Pp. 527. Price 3*s*. London: Baillière, Tindall and Cox. 1897. From the Publishers.

Cycling as a Cause of Heart Disease. By George Herschell, M.D., Lond. Pp. 44. Price 1*s*. London: Baillière, Tindall and Cox. 1896. From the Publishers.

The Progress of Medical Chemistry: Comprising its application to Physiology, Pathology, and the Practice of Medicine. By J. L. W. Thudichum, M.D., F.R.C.P., Lond. Pp. 212. Price 5*s*. London: Baillière, Tindall and Cox. 1896. From the Publishers.

The Chemists' and Druggists' Diary. 1897. Pp. 627. London: *Chemist and Druggist*, 42, Cannon Street, E.C. 1897. From the Publishers.

Western Australian Statistics of Gold Output. Reprinted by permission of the *Statist* and *Australian Mail*. Pp. 56. Price 6*d*. London: Sir Joseph Causton and Sons, Ltd., 9, Eastcheap, E.C. 1896.

PERSONAL NOTES.

Mr. Alderman H. Bartlett, Banbury, has been appointed Director of Ceremonies, in the Provincial Grand Lodge of Oxfordsh re.

Mr. Thomas Critchley, chemist and druggist, has been elected on the Blackburn Town Council.

Mr Josiah Oliver, a medical practitioner, of Maidstone, has been elected Mayor of that Borough, having previously acted as Councillor, Alderman, and Justice of the Peace. His sons are all connected with medicine:—Henry C. H. Oliver, A.P.S.; Frederick J. Oliver, A.P.S. (second time Councillor for Maidstone); Franklin H. Oliver, M.R.C.S., etc.; Charles P. Oliver, M.D.Lond., M.R.C.P., and S., etc. (Commander 5th Division Volunteer Medical Staff Corps); Herbert S. Oliver, L.S.A. As a family record this is probably unique.

CORRESPONDENCE.

Reply from Mr. Wells.

Sir,—I have to thank you for a copy of your Journal with a marked paragraph, in which you refer to some remarks supposed to have been made by me. "When or where the remarks were uttered, or the occasion," you do not know. Now, sir, I think you would have acted with more fairness to your "regular contributor" and myself had you published the report in question, instead of writing a leader on it, as it is hard to answer a charge when one is ignorant of what the charge is, but it seems to me that you would have been carrying out the precept which you so ably preach had you been courteous enough to write and send me a copy of the report in the first instance. Again, had you taken the trouble of making inquiry of the Registrar of the Pharmaceutical Society of Great Britain, you would have been informed that I had an official letter sent to him asking if the statement were true, and also that a reply was sent. I must say, however, that the reply was not as emphatic a denial as I expected. Had I received as full and as clear a denial as you now make, and one which I think would have come with better grace had you made it at once and not waited until you were informed that I had made some uncomplimentary references to your examinations, I would then have sent it to the daily papers in Dublin, which published and commented on "*Truth's* paragraph." This would have left it unnecessary for me personally to make a comment on it. Your readers may know that the statements made in *Truth* are "absurd and inaccurate," but you must admit that the general public readily believe anything that appears in the press, no matter how absurd, and I do not think I would be doing my duty as President of our Society if I had allowed such a statement as that which was in *Truth*, and copied into a number of our Irish papers, to remain unchallenged, as I consider it was calculated to do our licentiates an immense amount of injury. I was glad, therefore, that a reporter from the *Evening Telegraph* called on me, and published a statement the same evening, from which I send you herewith an extract.* I made these statements believing them to be absolutely true, and had no intention of drawing a comparison between the two Society's examinations, nor do I think there is any ground for saying I did so; I certainly did not use the expression "vastly inferior." I have always tried to encourage a friendly feeling between the two Societies, and it would certainly be far from my wish to speak in any way disparagingly of the sister Society. Hoping that you will give this letter the same publicity that you gave your own remarks,

Dublin, December 1, 1896. W. F. Wells, Jun.
President Pharmaceutical Society of Ireland.

Extract from *Evening Telegraph*, November 5, 1896.

"As to the questions of the examinations, Mr. Wells said that the statement contained in *Truth*, if made at all, was made by some unauthorised person. He was of opinion that the statement would not have been made by the Registrar of the English Society; as a matter of fact, the examination of the Irish Pharmaceutical Society for a (pharmaceutical) chemist was a superior examination to the chemist and druggist in England. In England they had two examinations, one of which was a higher standard than the other, but either qualifies a man to open shop and dispense medicine. The Irish examination was an intermediate one between those." . . . "From time to time the examination had been made even stiffer, and it was now a thorough test of what was required and any man having the Irish qualification was competent to dispense medicine for anybody."

Morality or Expediency.

Sir,—You desire an expression of opinion as to the improvements in the style of the *Pharmaceutical Journal*. I am highly pleased with it, and more so since reading your editorial of November 28, but I must say I was highly amused at the ending of that article to read about "the man with no capital" being "the worst offender against the ordinary principles of trade morality." Now, sir, I would like to know whether there are any principles of trade morality left, and what they may be? Where is the morality of the principle that some pay an annual subscription to the Pharmaceutical Society, while others may, at their own option, leave it alone? The funds of those who pay are used by the Society to prosecute offenders under the Pharmacy Act, and what does the non-subscriber lose, whether the Society wins their case or no? Where is the morality of the fines that are inflicted, going to enrich the Society, and yet the Society are powerless to prevent illegal trading?

Again, the construction of the law has made the unqualified assistant who sells for his master liable to be punished as the seller. Where is the morality of a chemist leaving his business to his apprentice or unqualified assistant while he is engaged on councils of towns or districts? Where, I ask, was the morality that the Society for years allowed men to open branch shops, and in neighbouring towns, with unqualified managers, while they compelled a man who wanted to go into business on his own account to pass a qualifying examination, and now, when that man does not succeed for himself, he can convert his business into a limited liability company, and the Pharmaceutical Society has no power to stop it? Where again is the morality of principle that by exacting the utmost amount of labour out of their assistants (chemists') at low salaries they have forced them into the employ of the limited liability companies, where they get less hours of labour and better pay, to the detriment of the one-man trader?

Where is the morality of the trader who pretends that he can sell so much cheaper than his fellow when he has four or five times the expenses, and pretends to carefully examine the work of several assistants and checks all their work? This could not be done were it not for the wholesale manufacturers supplying all their requirements, when they become just the "mixers of drugs," as one of your medical correspondents terms them. To my mind, sir! the question of morality in matters of business is sacrificed to-day for expediency, and the duty of the Pharmaceutical Society should be not to treat those who belong to it as if they were only appendages of the body which they can do with or without, just as a man's arm or leg, but to make us one united corporate body by insisting that every one should belong to it and pay the annual subscription as a licensed dealer in drugs, pharmacy, etc. As to business or trade charges, the Pharmaceutical Society might take a lesson from the Legal Society, see first that all who practice pay their licence to do so, and then have a list of authorised prices to charge, and for which they would have a right to sue, and then one man could not make himself out to be more honest than another, nor charge a lower price to one person to make it up on another. I offer these suggestions for the consideration of all who are connected with the Society, and should be pleased to learn their views.

Torquay, November 30, 1896. WM. JNO. RAWLING.

AQUA COMPOSITA.

Sir,—One of your correspondents has been asking for a formula for "Aqua composita." There are several given in Culpeper's 'School of Physic, or the English Apothecary, a Treatise of the Transcendant Sufficiency of our English HERBS, as they may be rightly used in medicine. London, 1677.' It may suffice to transcribe one of these formulæ, from which it will be seen that aqua composita is really a compound spirit:—

> "Take Zingiberis albi, Cinamomi, Cubeb Recent, Garioph, Nucis Muscati, Macis electi, Cardamomi, Zedoari, Galangæ, Piperis longi, of each equal parts: bruise them grosly, and to one part of these species adde six parts of simple *Aqua Vitæ*: put them in a long cucurbite, placing thereon a blind Alimbeck and let it stand to digest 14 dayes; afterwards distil in *Balneo Mariæ* with a gentle fire. Some also adde to the composition hereof, Fol. Salviæ, Rutæ, Castorei recent, Corticis Citri, Baccarum Lauri, Florum Lavendulæ, Rorismarini ana 2 drams."

That aqua composita was a popular remedy even in the century preceding that in which the above work was published is evident from a poem written by Thomas Tusser (1523–1580) on "Housewifely Physic," in which the following lines occur:—

> "Good huswife provides, ere a sickness do come,
> Of sundry good things in her house to have some,
> Good aqua composita and vinegar tart,
> Rosewater and treacle to comfort thine heart."

The treacle here referred to is, of course, the old "Theriaca Andromachi" or "Venice Treacle."

Brighton, November 30, 1896. C. S. Ashton.

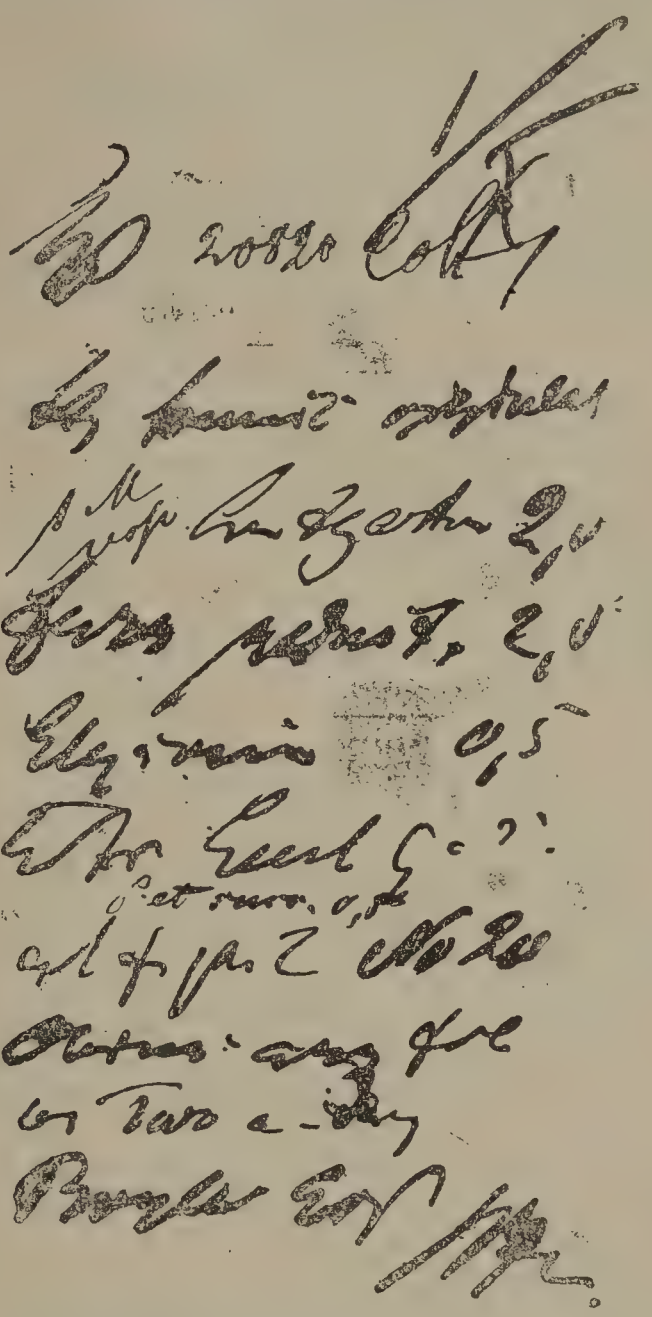
THE RELATION OF MEDICINE TO PHARMACY.

Sir,—In your synopsis of my paper on the above subject, the word "Pharmacopœia" has taken the place of a relative pronoun, and thereby changed the purport of the sentence. It was the proclivity of the medical profession to prescribe proprietary emanations from wholesale drug houses that fostered the sale of "patent medicines" amongst the not very discriminating public. It would grieve me to disturb the ashes of the Pharmacopœia by an imputation so heinous, and I beg of you to remove it.

Glasgow, November 30, 1896. ALEXANDER LAING.

AN ILLEGIBLE PRESCRIPTION.

Sir,—I enclose you photograph of a prescription I received to



dispense. As I have been unable to decipher the first ingredient, I thought it might be of interest to your readers.

Cardiff, November 20, 1896. JNO. MUNDAY.

"A DISPENSING PUZZLE."

Sir,—In reply to "Dispenser" *re* "Dispensing Puzzle," I have no doubt but that the prescriber intended ung. zinci oleat., and not "zinci oleas." I have had a similar case, and the above was th solution of difficulty.

Walton, November 28, 1896. J. J. SMITH.

THE NORTH BRITISH BOARD OF EXAMINERS.

Sir,—When the rule requiring examiners to retire after four years' service came into force, it was thought that the opportunity for the younger *régime* of Major men had come at last, and that, other things being equal, the appointments would go pretty well round. For a long time this Board has been a close preserve for a few individuals, who were appointed and re-appointed until the age limit barred them.

The increased severity of the Minor examinations, now a long way ahead of the Major these old fogies have passed, calls for a better class of men to examine in its requirements, and the idea of gradually retiring the old hands was a welcome one. But the

Executive, who have the power of nominating new examiners, do not appear to know the reason of the retiring rule, and we have this week the spectacle of that body selecting one of their own members and also an old examiner to the vacant places.

Is the Executive to be considered the stepping stone to the examining board? May we regard the members of that body as prospective examiners? Upon what principle are the appointments made? There are plenty of clever pharmacists in Scotland equally as learned as those chosen, and whose only fault appears to be that they are not of the Executive. Why not advertise the posts and let candidates send in their qualifications as is the case with other educational bodies?

The present system is unfair, and does not give us the up-to-date men we ought to have in York Place. Old and crusted appears to be a necessary qualification at present; whatever else you may be, be a crank and if possible connected with the N.B.E. Hoping to see some of your readers take up this subject and thrash it out properly,

November 30, 1896. "Natu Minimus" (67/22).

A Journalistic Oversight (?).

Sir,—The many readers of the Journal who remember Mr. Hooper's important and interesting article on camphor-leaf oil, which appeared in January last (*Ph. J.* [iv.], ii., 21), and may happen to read the note on the same subject in the *Chemist and Druggist* for November 28, p. 796, will at once perceive that the information in this latter note is wholly derived from the article in the Journal. They will also see with surprise that there is not the faintest indication of the source from which the information is derived. Such an oversight (?) would be less surprising in a Yankee political "rag," but in a British trade journal it calls, I think, for notice.

November 30, 1896. Fair Play (67/31).

ANSWERS TO QUERIES.

[*Queries addressed to the "Editorial Department, 17, Bloomsbury Square, W.C.," will be replied to in the Journal as early as possible after receipt, but the Editor cannot undertake to reply to them through the post, nor is it always possible to publish answers the same week. Questions on different subjects should be written on separate slips of paper, each of which should bear the sender's name or initials. Readers requiring working formulæ for special preparations, and intimating their wants to the Editor, will be assisted as far as may by practicable. The word "parts," when used in formulæ, invariably indicates parts by weight. Anonymous queries will be ignored.*]

Migrainine.—This is a citrate of antipyrine and caffeine, containing about 9 per cent. of caffeine. [*Reply to* S. E. M.—67/11.]

Assay of Hydrogen Peroxide.—Write to Mr. J. B. Smith, 4, Holmdene Avenue, Herne Hill, S.E., for particulars. [*Reply to* H. H.—67/29.]

Solution of Opium Alkaloids.—Apply to the makers of alkaloids, a list of whom appeared in last week's Journal. [*Reply to* G. W. B.—67/18.]

Extract of Nux Vomica.—You have overlooked the fact that sodium carbonate is used in the test. The alkaloids probably exist in combination with organic acids. [*Reply to* Curious.—66/43.]

Octolis Credé.—This is a hybrid Latin title intended to represent Actolis (Credé). Actol is a form of silver lactate, the antiseptic properties of which were discovered by Credé, *vide Ph. J.* [iv.], ii., 243. [*Reply to* Devonite—67/30.]

Gibert's Syrup.—This is a well-known Continental remedy for tertiary syphilis; it is prepared from mercuric iodide, 1; iodide of potassium, 50; water, 50; dissolve, filter, and add simple syrup, 2400. It is given in spoonful doses. [*Reply to* Devonite.—67/30.]

Glycerin of Cucumber.—We are glad you find the formula produces "a very good article." To avoid causing froth, omit the tragacanth. Mix the ingredients in a hot mortar and stir gently until perfectly cold; then cover it over and allow to stand overnight. In the morning again give a good stir. By this method you will not be troubled with undue frothing. It is not necessary to use white glycerin soap; good white Castile soap answers perfectly well. [*Reply to* H. B. Sharman.—67/26.]

Microscope Accessories.—See reply to "Countryman," in *Ph. J.* for September 26 last (p. 288). Advertise in our weekly "Exchange" for a second-hand instrument. We are glad to learn that weekly perusal of the Journal has made you "desirous" of continuing your studies. Go on and prosper. [*Reply to* E. D.—67/16.]

Dispensing Query.—The formula zinci oxidi, bismuth oxid., āā ℥ij.; liniment calcis, ℥ss.; glycerin amyli, ℥j., has given a fairly satisfactory result as follows:—Rub the oxides smooth with the liniment in a hot mortar, and add the melted glycerin of starch then stir continuously until cold. [*Reply to* C. P.—65/14.]

Fertilisation of Flowers.—You are more likely to find what you want in Lubbock's book 'On British Wild Flowers Considered in Relation to Insects.' Both this and Müller's work may be borrowed from the Pharmaceutical Society's Library. We are not aware that a new edition of Vines' 'Physiology of Plants' is in prospect. Write to the publishers. [*Reply to* W. H. M.—67/27.]

Neutral Organic Iron Compound.—Probably you refer to hæmol, a natural iron compound extracted from animal blood. It is made, amongst others, by Merck, of Darmstadt. You will obtain it through any wholesale druggists. It is much used in Germany for chlorosis, in doses of 6 to 8 grains. It is generally given in a cachet. [*Reply to* Limelight.—65/33.]

Spruce Beer.—Sugar, 8 pounds; essence of spruce, 4 fluid ounces; boiling water, 10 gallons; compressed yeast, 1 ounce. Pour the boiling water on the sugar, and add the essence of spruce; when the temperature has fallen to 100° F., add the yeast and set aside in a warm place for two days; then bottle off into stone ginger-beer bottles. If you want brown spruce beer, use treacle instead of sugar. You can obtain the essence of spruce from any wholesale mineral water essence makers. [*Reply to* W. H. B.—65/8.]

Pill Difficulty.—Your pills are certainly rather awkward ones, containing strychninæ, 2 grains; pulv. ipecac., ℈ii.; ol. carui, ℥ss.; acid benzoic, ℥i.; ext. gentianæ, ℥i. M. et ft. pil. 60. These may be massed as follows:—Dry the extract of gentian and reduce it to powder. Mix the other ingredients and add as excipient 30 grains (or *q.s.*) of a mixture of equal parts of powdered white Castile soap and of carbonate of magnesia. Mass with the caraway oil, and, if necessary, add more of the excipient powder. [*Reply to* Puzzled.—66/17.]

The Title "Pharmacist."—Legally, no one can use the title "pharmacist" unless his or her name appears on the Register of Pharmaceutical Chemists, though it is nowadays a common practice to refer to chemists and druggists as pharmacists, and so long as the title is not used for business or professional purposes by those not legally entitled to do so, there appears little objection to the use of the term as a convenient one to designate a member of the class practising pharmacy. [*Reply to* Migranine.—64/11.]

Dispensing Query.—The recipe "No. 1," hydrarg. perchlor., 2 grains; s.v. rect., *q.s.*; ol. amygd., ℥iv.; cera alb., ℥ss.; cetacei, ℥ss.; zinci oxidi, ℥j.; aquæ rosæ, ad ℥viij., gives a very presentable cream without separation on employing the following *modus operandi*:—Rub the zinc oxide perfectly smooth with the oil of sweet almonds. Let the mortar stand in the water bath until it is thoroughly hot through. Meanwhile, melt the wax and spermaceti together, and set the rose water to get warm. Pour the melted waxes into the oil, stir constantly, then add gradually the warm rose water. Lift the mortar out of the water bath, add the mercuric chloride dissolved in a few minims of alcohol, and stir lightly but continuously until the mixture is perfectly cold. An elegant white homogeneous cream results. [*Reply to* C. P.—65/14.]

CORRECTION.

Tincture of Strophanthus.—In column "F" of Mr. John Barclay's table published last week (*ante*, p. 463), for "Strophanthin" read "Strophanthidin."

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Ashton, Blythe, Braithwaite, Danvers, Dennis, Dunn, Edwards, Foster, Green, Hill, Howorth, Jackson, Kirkby, Laing, Line, Lunan, Maben, McKellar, Matthews, Miles, Mitchell, Moore, Morley, Moss, Prosser, Reynolds. Sharman, Silvester, Smith, Tocher, Trancent, Wells, Wood, Wyatt.

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A NOTE ON THE ESTIMATION OF QUININE.

BY DAVID HOWARD.

Since the publication of the last British Pharmacopœia great progress has been made in the attainment of greater accuracy in testing the salts of quinine, and moreover, the altered conditions of the supply of cinchona bark have rendered it easy to deliver quinine of a far higher purity than formerly. Instead of succirubra bark containing a mixed alkaloid of which not one half was quinine, the staple raw material is now the Java ledgeriana bark, giving an almost pure sulphate of quinine.

I propose, then, to sum up briefly the results of the work of the eminent chemists who have devoted so much skill to the subject, and if I do not in all cases give reference to the work of Dr. Paul, of the veteran quinologist Dr. de Vrij, of Dr. Hesse, whose work as a quinologist the Pharmaceutical Society has so rightly honoured, and of many others it is by no means with the intention of claiming their results as my own, but rather of recognising that their work has already become classic.

It may perhaps seem remarkable that there should be much difficulty in the matter. The great difference in solubility between the sulphate of quinine and of the other cinchona alkaloids and the ready crystallisation from ether of cinchonidine, quinidine, and cinchonine would seem to make the matter a very easy one, but the obstinacy with which quinine and cinchonidine form more or less definite compounds when crystallising together, as sulphates from water and as alkaloids from ether, render the problem by no means easy of solution.

The original test proposed by Liebig, viz., shaking the sulphate of quinine with ether and ammonia, will pass as pure a sulphate containing upwards of 10 per cent. of sulphate of cinchonidine. The ammonia test, invented by Dr. Kerner, which either in its original form or with modifications is the most widely adopted of any, can only give empirical results, owing to the difficulty of dissolving out sulphate of cinchonidine when combined with sulphate of quinine.

This difficulty is the more serious as the crystallisation of sulphate of quinine from an impure solution is never homogeneous, the salt deposited varying according to the temperature. This has been carefully worked out by M. Prunier (*J. Pharm. Chimie* [5], v., 23, 265).

If the strong solution is slowly cooled, quinine sulphate of approximate purity crystallises out till the temperature reaches 50° C. Below that temperature cinchonidine sulphate contaminates the sulphate of quinine in an increasing ratio.

It follows, therefore, that when quinine is tested by Dr. Kerner's test, as prescribed in the Ph. Ger., II, by shaking with cold water, a solution is obtained of the outside of the crystals of the mixed sulphate, and specially of those last deposited, and the more rapidly the salt has been crystallised in the factory the more completely the quinine and cinchonidine sulphates will have crystallised together, and, therefore, the purer the mixture will appear to be.

To obviate this difficulty the sulphate may be effloresced by heat, and the interior of the crystals thus exposed to the solvent. The U.S.P. has adopted this method. Again, the sulphate may be treated with hot water and the mixture after sufficient digestion and shaking cooled down and maintained at the normal temperature with frequent agitation till the danger of supersaturation is over. This last is the method adopted in the 'Codex Français.' The careful researches of Drs. Hesse and Weller show that 60° C. is the most effectual temperature to use; if heated above that point, and specially if entirely dissolved as proposed by M. Prunier, all the difficulties of the uncertainty of the composition of the crystals deposited are very much intensified.

The Ph. Ger., III, combines both these alterations of the ammonia test; it directs that the sulphate shall be exsiccated, then heated with water and cooled.

I have dwelt somewhat at length on these difficulties, because after all they are common to all the more modern methods of testing, whether the cinchonidine is estimated by the ammonia required to make a clear solution when added to the aqueous solution of the sulphate, or by the behaviour of the solution with oxalates or chromates or carbonates, or by crystallisation of the alkaloid from ether.

There is another method of analysis proposed by Dr. de Vrij and Dr. Hesse which depends on crystallising the quinine as far as possible as bisulphate, and estimating the cinchonidine remaining in the mother liquor, by shaking with ether and ammonia; unfortunately although the cinchonidine almost entirely remains in the mother liquor, owing to the great solubility of the acid sulphate of quinine, the solution contains so much quinine that the cinchonidine largely remains dissolved in the ethereal solution. In order to obtain accurate results by this method, a sufficient quantity of the sulphate of quinine must be taken to allow the solution separated from the first crop of crystals to be evaporated to a small bulk, again crystallised, and the mother liquor carefully separated from the crystal by a filter pump and shaken with ether and ammonia. If a complete analysis is required, the crystals of impure cinchonidine should be dissolved in absolute spirit and 2·1 C.c. of 50 per cent. sulphuric acid for each gramme of crystal added. The cinchonidine will then crystallise out almost entirely as tetrasulphate, and by neutralising the mother liquor and evaporating off the spirit the quinine may be obtained as sulphate. The ethereal solution still containing cinchonidine should be evaporated, the alkaloid crystallised as bisulphate, and the mother liquor again treated with ether and ammonia. These last operations are, however, hardly necessary in practice, for when this test is carefully carried out, the quinine crystallising with the cinchonidine very nearly balances the cinchonidine dissolved by the ethereal solution of quinine. The large quantities that must be taken to carry out the process render it unfit for ordinary analysis, and thus, although the separation of the cinchonidine as bisulphate is far more perfect than with the neutral salt, it is necessary for an official process to fall back upon the separation of the neutral sulphates, and we will now proceed to consider the advantages and disadvantages of the methods of analysis already mentioned.

If the ammonia test be adopted after a preliminary heating of the quinine sulphate with water, the greatest care must be taken to avoid imperfect deposition of the dissolved quinine; if proper precautions are not taken the result will show an apparent excess of impurities. Another difficulty may arise which I have not seen noticed. If sulphate of quinine be crystallised from a solution to which as much quinine alkaloid has been added as the boiling solution will retain, the crystal will carry down a portion of the excess of base, and a portion will remain in the solution and cause it to take much more solution of ammonia to re-dissolve the quinine at first precipitated than would otherwise be the case. The crystal from this solution similarly gives a solution when treated for the ammonia test that requires an excess of ammonia far exceeding the amount that an exactly neutral salt would require.

On the other hand the presence of a very small quantity of sulphate of ammonia or of sulphate of soda greatly diminishes the solubility of sulphate of quinine. A solution containing 0·5 per cent. of either salt retains so little quinine sulphate, as hardly to precipitate with ammonia. It is true that neither of these conditions ought to be found in commercial sulphate of quinine, but they should be watched for, especially the latter. They may,

however, very readily obtain in testing the sulphate formed from alkaloid or other salts as directed by various pharmacopœias in testing their purity. None of the other methods adopted to test the cold aqueous solution obtained in a quinine test seem to afford any advantage over the ammonia test with its recent improvements. The last proposed is that of Dr. Kublé, and I would recommend the study of the comments of Dr. Hesse (*Archiv d. Pharmacie*, 234. Bd., 3. Heft) and of Dr. Weller (*Pharmaceutische Zeitung*, 1896, No. 28) as effectually proving that it has no advantages over the older test and great disadvantages of its own.

With the ether test the case is different. If a solution is prepared from quinine, as directed in the 1885 Ph.B., it is quite true, as shown by Dr. Paul, that many of the defects I have spoken of will be present. The addition of acid as directed fails to keep the cinchonidine more than partially in solution, and though the difficulty of getting a solution exactly saturated at a fixed temperature is avoided, the difficulty of crystallising the cinchonidine from ether in the presence of quinine is a great disadvantage.

The remarks of M. Prunier, to which attention has already been called, point out, however, a direction in which great advantages can be obtained from the ether test, which are impossible with any other. He has shown that if a solution of impure sulphate of quinine is cooled down slowly to 50° C., and maintained at that temperature with frequent agitation for some time, a very large proportion of the quinine is crystallised, usually containing not more than 2 per cent. of cinchonidine. If it be then filtered at that temperature the solution will contain within 2 per cent. of the total cinchonidine. If it be then evaporated to a small bulk and the magma obtained, shaken with just enough ether and ammonia to produce a momentary solution, a crystallisation will form which bears a definite relation to the cinchonidine contained in the original sample. It is true that the whole of the cinchonidine present is not contained in the crystal, but if the crystal does not amount to more than 2 per cent. of the sulphate, very little more can be obtained by re-crystallisation. If it exceeds that amount it is desirable to repeat the process with the sulphate crystallised at 50° in any case where it is required to have a full comparison of the contained impurities. As is always the case when cinchonidine crystallises from ether in the presence of quinine, it will contain from 20 to 30 per cent. of quinine, according to the proportions of the two alkaloids in the solution.

On the other hand ethereal solution of quinine will dissolve a proportion of the cinchonidine considerably in excess of the normal solubility of the alkaloid in ether.

As far as my experience goes, although the relation between the weight of the crystals obtained by this test and the proportion contained in the quinine is empirical, the results are more certain than those of the ammonia test, unless the latter be carried out by most experienced operators. There is one difference between the two tests which should be noted. The ether test gives no indication of the presence of hydroquinine. This little known alkaloid is generally present in commercial sulphate of quinine to the extent of from 2 per cent. to 4 per cent. The sulphate is intermediate in solubility between that of quinine and that of cinchonidine, and the presence of it in a mixture increases the ammonia required, but in a less degree than does cinchonidine. It is not, as far as I know, ever present in quantities above those given above, and there seems no special reason to guard against its presence, or to regard it as about half as objectionable as cinchonidine, which is the effect of the ammonia test.

If it be desired to estimate it, the alkaloid dissolved in the ether in the modification of the bisulphate test that I have described in the foregoing pages may be dissolved in an excess of dilute sulphuric acid, and the solution treated at 0° C. with a 4 per cent. solution of permanganate of potash, added drop by drop with constant stirring till the solution, when filtered, only slowly decolours the permanganate solution. The manganese oxyd is then filtered and washed, and the solution treated with ether and ammonia, the alkaloid washed out of the ether with dilute sulphuric acid, and the acid solution neutralised and crystallised.

There is one case in which the ammonia test offers great advantages, that is if a test is required for pure sulphate of quinine for that the test of the Ph. Ger., III, answers admirably. It is, however, a grave question if it is wise to insist on the use of the pure salt in pharmacy. To obtain it increases the expense greatly beyond the proportion of impurities removed, and those impurities are not only innocuous, but have the same therapeutic effects as quinine, though seemingly in a lower degree. The result of an over-severe test is that a second quality is offered in the market, which is habitually used. In Germany the Ph. Ger., II, is far more used than the Ph. Ger., III. It is far more effective to have a standard which can be, and is, insisted on.

Sulphate de Quinine, extract from 'Codex Français,' 1884.—Take 2 grammes of sulphate of quinine and mix in a stoppered tube with 20 C.c. of distilled water shaking briskly so as to suspend the salt in the liquid; keep the tube during half an hour plunged in hot water shaken from time to time. Allow to cool completely in the air, and then in a water-bath at a temperature of 15°, in which the tube should be kept for half an hour with frequent shaking. Filter the contents through a small Berzelius filter.

Measure in a graduated pipette 5 C.c. of the clear liquid, place in a tube, and add 7 C.c. of ammonia solution, sp. gr., 960, mixing the two liquids as little as possible in the process. Place the stopper in the tube, and invert it gently. A clear mixture should then be obtained immediately or very quickly, and should remain clear for twenty-four hours. A persistent turbidity or the formation of crystals in the liquid, which is clear at first, show the presence of an undue proportion of alkaloids other than quinine.

Chininum Sulfuricum, extract from 'Pharmacopœa Germanica,' 1882.—Grammatis duobus chinini sulfurici calore 15° cum centimetris cubicis viginti aquæ conquassatis post semihoram centimetros cubicos quinque in tubulum exploratorium filtra; quo facto paullatim liquorem ammonii caustici adde, donec chininum expulsum rursus solutum erit. Ad quod efficiendum qua opus fuerit copia liquoris ammonii caustici centimetros cubicos septem ne excedat.

Chininum Sulfuricum, extract from 'Pharmacopœa Germanica,' 1890, 3rd edition.—Two grammes quinine sulph. which has been fully dried at 40° to 50° are treated in a tube with 20 C.c. of distilled water, and maintained for half an hour with frequent shaking at a temperature of 60° to 65° in a water-bath. The tube is then placed in water at 15°, and allowed to stand with frequent shaking for two hours. It is then filtered, and 5 C.c. of the filtrate at 15° placed in a dry tube and mixed with ammonia solution at 15° until the precipitate is re-dissolved. The amount of ammonia solution necessary should not amount to more than 4 C.c.

Solfato di Chinina, extract from Italian Pharmacopœia, 1892.—Two grammes of sulphate of quinine are first dried at 40° to 50°, then shaken in a little flask with 20 C.c. of water, and kept on the water-bath at a temperature of 100°; after half an hour the flask is taken out, and water added to replace that which has evaporated. The flask is then left for half an hour, and then placed in a bath at 15°, where it is left for a further period of half an hour, care being taken to shake frequently. The contents are then filtered, and 5 C.c. of the filtrate placed in a graduated tube and treated with 7 C.c. of ammonia, ·960, should yield a clear solution.

Quininæ Sulphas, extract from the 'United States Pharma-

copœia, 1893.—If 2 grammes of the salt (which must have been previously ascertained to be strictly neutral to litmus paper, or have been rendered so) be dried, as far as possible, at 100° C. (212° F.), the residue then agitated with 20 C.c. of water, and the mixture macerated for half an hour at 15° C. (59° F.), with occasional agitation, upon proceeding further as directed under quinine (see quinina) the results given should be obtained.

Sulfas Chinini, extract from the 'Pharmacopœia Nederlandica,' 1889.—Sulfatis Chinini grammata 2 ut plane fatiscant, per horæ dimidium caloris gradu 40° ad 50° C. calefacta, si cum centimetris cubicis aquæ 20 per horæ dimidium caloris gradu 60° ad 65° C. calefiant, crebro agitando; cum mixtura refrixerit per 2 horas caloris gradu 15° seposita, sed interea crebro conquassata, deinde filtrata erit, tum huius filtrati, centimetri cubici 5, centimetris cubicis 5 ammoniæ caloris gradu 15 admixtris limpidum præbeant liquorem.

NOTES ON THE TREES YIELDING MYRRH AND GUM ARABIC.

BY E. M. HOLMES, F.L.S.,
Curator of the Museums of the Pharmaceutical Society.

Myrrh.

Myrrh is imported into this country chiefly from Aden, to which port it is sent from Arabia and Abyssinia. Some comes from Bombay, and is known in the London market as "red Zanzibar" myrrh.*

Writers on materia medica distinguish four varieties of myrrh, viz., Somali myrrh and two forms of Arabian myrrh, which for the sake of distinction may be called the Arabian myrrh of Hanbury, and the Arabian myrrh of Dymock, and Yemen myrrh.

1. Somali Myrrh is well described in 'Pharmacographia' as follows:—"Myrrh consists of irregular roundish masses, varying in size from small grains up to pieces as large as a hen's egg, and occasionally much larger. They are of an opaque reddish-brown colour, with a dull dusty surface. When broken they exhibit a rough or waxy fracture, having a moist and unctuous appearance, especially when pressed, and a rich brown hue. The fractured translucent surface often displays characteristic whitish marks, which the ancients compared to the semi-circular mark at the base of the finger-nails. It has a peculiar fragrance and an aromatic, very bitter and somewhat acrid taste.

2. Arabian Myrrh of Hanbury.—The drug, which is not distinguished by any special name in English commerce, is described in 'Pharmacographia' as follows:—It occurs in irregular masses, seldom exceeding 1½ inches long, and having a somewhat gummy-looking exterior. The larger lumps seem formed by the cohesion of small rounded, translucent, externally shining drops or tears. The fracture is like that of common myrrh, but less unctuous, and has not the whitish markings. The odour and taste are those of the ordinary drug.

3. Arabian Myrrh of Dymock, or "Meetiya."—This is imported into Bombay from Aden and Makulla, and is said by Dr. Dymock to be mostly sold in India as true myrrh. The specimen received from Dr. Dymock differs entirely from the Arabian myrrh described by Hanbury. It has a dull surface, dark reddish-brown colour, a more unctuous and waxy fracture, and has white marks like Somali myrrh, which it resembles in taste, but its odour is rather less fragrant.

4. Yemen Myrrh.—Besides the varieties found in the English market, Hanbury mentions one produced in Yemen, the resin of which, dissolved in petroleum spirit, does not give a violet colour on the addition of bromine, and thus differs from Somali myrrh and from the Arabian myrrh of Hanbury, collected in the Fadhli district. Apparently the same drug comes occasionally into the English market and is regarded as an inferior dark-coloured myrrh.

There are also three others mentioned in 'Pharmacographia Indica,' i., p. 307, as occurring in the Bombay market, viz., Persian myrrh, sent principally from Mekran; Chinese myrrh,* and Siam myrrh, or "meetiya."

Dymock states that Persian myrrh occurs in very large masses of a reddish-brown colour and of considerable translucency, very oily, and in taste and in odour very closely resembling Somali myrrh. Concerning Siamese myrrh, he remarks that it is hardly distinguishable from the "meetiya" of Arabia ('Mat. Med. W. India,' p. 126).

Judging from the taste and odour of the four principal varieties of myrrh mentioned above, it might reasonably be supposed that they are the product of one species of *Commiphora* or of varieties of the same species, modified by conditions of soil, elevation, and climate. Concerning the plant which yields Somali myrrh we have no exact information, for there exists very little evidence connecting the gum resin with the trees supposed to yield it, owing partly to the fact that collectors of plants are not usually well acquainted with the drugs of commerce.

In 1873, Hildebrandt obtained on the Ahl or Serrut mountains in Somaliland specimens with leaves and fruits only from trees about 9 or 10 feet high on which he saw a gum resin exuded, which the natives assured him was myrrh. This plant is figured in Bentley and Trimen's 'Medicinal Plants,' No. 60. Hildebrandt referred it without doubt to *Balsamodendron myrrha*, Nees (*Sitzung Naturforschenden Freunde zu Berlin*, November 19, 1878, p. 96). Concerning this species, however, Schweinfurth now states that it is completely inodorous, and does not produce any resin (*Kew Bulletin*, 1896, p. 89).

Subsequently, in 1878 (*Kew Report*, p. 48), Mr. Wykeham Perry sent to Kew a living branch of a myrrh plant collected in Somaliland, which, however, had neither leaves nor flowers. This was supposed by Dr. Trimen to be identical with Hildebrandt's plant, differing from it only in being less spiny.

The native name of this plant is given as "didthin," and of the product "mulmul." If *C. myrrha* does not yield myrrh then these plants cannot be referred to that species, and we are still in the dark as to the tree which yields Somali myrrh.†

With respect to Arabian myrrh the case in different.

About the year 1820, Ehrenberg collected specimens of a myrrh tree at Gezan in S. Arabia. These were referred to *Balsamodendron myrrha*, Nees. Subsequently, however, Berg showed that two species were mixed under this name, and he separated the second, which has obcordate leaflets, under the name of *B. ehrenbergianum*, Berg. The first of these, *Balsamodendron*, or as it is now called *Commiphora myrrha*, has recently been stated by Schweinfurth to yield no resin at all, and the second has been identified as a variety of the Balm of Gilead tree, *C opobalsamum*.

Professor Schweinfurth has recently stated that Arabian myrrh is the produce of *Commiphora abyssinica*, Engl., and of *C. schimperi*,‡ but the Director of Kew Gardens, in a lengthy paper on the subject in the *Kew Bulletin*, 1896, p. 91, in which he differs somewhat from the views of Dr. Schweinfurth, expresses the opinion that *C. simplicifolia* may be accepted as the source of Yemen myrrh, and that Fadhli myrrh may be yielded by both *C. myrrha* and *C. simplicifolia*.

Professor Schweinfurth has very kindly supplied the Herbarium of the Society with specimens of *C. abyssinica*, *C. schimperi*, *C simplicifolia*. *C. africana*, and *C. opobalsamum*.

* According to information received from Mr. C. Christey.

* Myrrh appears to have been shipped from China as early as A.D. 1340, for it is mentioned by Ibn Batuta amongst the articles of trade, at Thana ['Pharmacog. Ind.,' i., p. 307].

† See *Ph. J.* [3], xix., p. 399.

‡ *Bericht der Pharm. Gesellsch.*, 1893; *Ph. J.* [3], xxiv., p. 896.

It occurred to me, therefore, that some light might perhaps be thrown on this difficult question by tasting the bark and fruits of these specimens, especially as true myrrh has a very bitter taste* and a peculiar aroma, hardly likely to be entirely absent in the plant itself. The results I have obtained are as follow:—

1. *Commiphora abyssinica* (No. 1700, Schweinfurth).—Erythræa. Neither fruit, bark, nor leaves have any bitterness or aroma.

2. *C. schimperi* (No. 1310a, Schweinfurth), Erythræa.—The fruit has a turpentiny flavour, less marked in the bark, but neither have the bitterness nor the aromatic taste ot myrrh.

3. *C. simplicifolia* (1310, Schweinfurth), Yemen.—Neither the fruit nor the bark have the bitterness nor the aromatic taste of myrrh. This specimen is labelled "khaddasch yields Arabian myrrh."

4. *C. africana* (721, Schweinfurth), Erythræa.—Labelled "Yields Abyssinian myrrh." The fruit and bark have the slight bitterness and the cedar-like flavour of African bdellium, and I have no doubt this species yields, as has generally been supposed, African bdellium.

5. *C. opobalsamum* (Nos. 526, 2292–2299, Schweinfurth), Nubia and Arabia Felix.—These possess the lemony taste characteristic of the Mecca balsam, which is recognisable in spite of the strong taste of naphthaline that all the specimens possess.

6. *C. erythræa* (Schweinfurth, No. 2304), Nubia, yields the "kafal" wood of the Cairo bazaars.—This has a bitter taste and slightly aromatic flavour, quite different to that of myrrh.

Besides these specimens there exists in the Hanbury Herbarium a specimen of—

7. *C. playfairii* (Herb. Hanb., No. 93), Somaliland.—The bark and fruit have the curious soapy taste characteristic of the gum resin "hotai." This specimen was sent by Dr. Vaughan as the plant yielding hotai, and it is no doubt the correct plant.† This species which has been confounded with *C. myrrha* by Engler, differs from it in the nearly sessile leaves and different fruits.

8. In the materia medica collection of the Society there is a small branch of a myrrh plant from the Fadhli district, sixty miles east of Aden, collected by Mr. Wykeham Perry. It was presented by the Director of Kew Gardens. The specimen, unfortunately, possesses neither leaves, flowers, nor fruits, but the bark has most distinctly the strong bitter taste, and also the characteristic flavour of myrrh. I have no doubt whatever that it is one of the plants yielding Arabian myrrh.

It seems appropriate to add here the following note:—

Some years ago, in 1877, when compiling a catalogue of this Museum, I saw in the Herbarium of the British Museum a specimen of *Copobalsamum* with an exuded drop of resin upon the twig. Of this the Keeper of the department kindly permitted me to taste a fragment. It had exactly the characteristic lemony flavour of Mecca balsam, and I have had no doubt since then of the species which yields that product. The specimen with the adherent drop is figured in Bentley and Trimen's 'Medicinal Plants,' tab. 59.

On another occasion, when the plants sent by Mr. Wykeham Perry were still alive in the propagating house at Kew, I observed a drop of resin exuded on the branch of the one having large leaflets. I was permitted to taste the drop, and found that it had exactly the peculiar flavour of the drug called bissa-bol. I compared the leaves, which are now in the Kew Herbarium, with those of other species, and came to the conclusion that they were identical with those of *B. kataf*, which has glabrous leaves. I find, however, that the authorities at Kew now identify it as *C.* (*Hemprichia*) *erythræa*, var. *glabrescens*. The plant has no flowers or fruit, and in support of my opinion I can only say that *C. erythræa* is said to yield kafal wood, which is red, and which has not the bissa-bol flavour, and that the wood of *C. kataf*, like that of the specimen of the bissa-bol plant, preserved in Kew Museum, No. 1, is white.

In any case there is no doubt that the bissa-bol is the product of the plant labelled in Kew Herbarium "*H. erythræa*, var. *glabrescens*." In *C. erythræa* the leaves and twigs are pubescent, in the bissa-bol plant they have only a few scattered hairs.

The only plant of those said to yield myrrh which I have not hitherto had the opportunity of tasting is *C. myrrha*, Engl. By the courtesy of the Keeper of the herbarium at Kew I have been permitted to taste fragments of the stem. These have the strong persistent bitter taste of myrrh, and in this respect correspond exactly to Mr. Wykeham Perry's leafless branch from the Fadhli district, and with Captain Hunter's herbarium specimens of the true myrrh plant (from Arabia), which evidently belong to the same species. As none of the other supposed myrrh plants have a very bitter taste, and as myrrh could hardly be produced from a tree which had not a bitter taste, the presumption is that Dr. Schweinfurth has been misled either by the natives of Arabia or by neglecting to compare the taste of his plants with the products themselves; or that his *C. myrrha* is not the *C. myrrha* of Nees. The latter suggestion is probably the correct one, as may be seen by a comparison of the figures given by Nees and Engler. His specimens of *C. myrrha* at Kew are labelled "ohne aroma." This may be explained by the fact that the young twigs do not, as in the Balm of Gilead plant, retain the aroma. It may be that the oil of myrrh oxidises rapidly, or that it is not developed in the young shoots. At all events, in the dried plant I find the aroma of myrrh present only in the thicker bark around a branch about three quarters of an inch in diameter, but the bitterness both in the slender twigs and in the thorns.

So far, therefore, as my observations go, I am driven to the conclusion that Arabian myrrh is the produce of the plant named *Balsamodendron myrrha*, by Nees, and not of *C. abyssinica*, nor of *C. simplicifolia*, nor of *C. schimperi*.

I append here a list of the species which have hitherto been detected in Arabia and Somaliland, in the hope that when another expedition is sent to either of those countries specimens of these trees will be brought home with the products attached to them, and with good herbarium specimens of both flowers and fruits:—

Arabia.	Somaliland.
C. abyssinica.	*C. abyssinica*, var. *molmol.*
C. kataf.	*C. gur.eh.*
C. myrrha.	*C. hildebrandtii.*
C. opobalsamum.	*C. opobalsamum.*
C. schimperi.	*C. playfairii.*
C. simplicifolia.	*C. rivae.*
	C. rostrata.
	C. robecchii.
	C. serrulata.

There are several acrid gum resins that occur mixed with myrrh as imported. The most abundant of these is opaque bdellium, which, as pointed out by Mr. R. H. Parker,* differs from hotai in its greater toughness, and in giving an intense greenish-black colour with ferric chloride.

These are doubtless yielded by other species of *Commiphora*, and it may be hoped that future explorers will take with them a competent pharmacognosist who could identify these products on the trees themselves.

Thirty-five species of the genus *Commiphora* are found described in A. De Candolle's 'Monographiæ Phanerogamarum Prodromi,' vol. iv., pp. 9–29.

* It may be pointed out that so characteristic is this bittterness that myrrh is known in many of the Eastern languages by a word meaning bitterness. Hebrew, morr; Arabic, murr; Turkish, murri; Chaldean, mora; Syriac, mouru; Hindostani and Malay, murr.

† *Pharm. Journ.* [i.], vol. xii., p. 227.

* *Pharm. Journ.* [3], xi., p. 41.

GUM ARABIC.

The species of acacia presented by Dr. Schweinfurth include the following :—

1. *Acacia senegal*, Willd.—This tree is said to yield the fine white gum of Kordofan. It extends from Nubia to Senegal. In West Africa it is known as "verek," and in East Africa as "hashab."

2. *Acacia séyal*, De C.—This tree, in common with *A. stenocarpa*, Hochst, is called "taleh," and according to Schweinfurth yields the principal part of the brownish gum of the Soudan. In this country the gum is known as "talea" gum.

3. *Acacia séyal*, De C., var. *multijuga*.—This tree also yields gum, but not when it grows south of 10° N. Lat.

4. *Acacia fistula*, Schw.—The tree grows abundantly in the district of Gedaref, in Southern Nubia, and in the province of Sennaar. The native name of the tree is "ssoffar," literally the whistling tree, on account of the wind causing a flute-like sound when the tree is moved by it, owing to the bulbous bases of its thorns being perforated by an insect. The gum is known as Gedaref gum. It probably yields some of the gum known in this country as Sennaar gum.

My object in drawing attention to these specimens is to point out that as the quality of gum brought into the market varies exceedingly in its solubility, the viscosity of its mucilage and its colour, it would be worth while to try and cultivate the best kind, viz., *Acacia senegal*, in Australia, or other suitable colonies.

PHARMACEUTICAL SOCIETY.

BENEVOLENT FUND GENERAL MEETING.

ELECTION OF ANNUITANTS.

A General Meeting of the Members and Associates of the Pharmaceutical Society and of Subscribers and Donors to the Benevolent Fund was held at the house of the Society, 17, Bloomsbury Square, on Tuesday, December 8, for the election of three annuitants.

Scrutineers were appointed by the meeting, and Mr. E. N. BUTT, having been elected as Chairman, proceeded to examine the voting papers.

The General Meeting then adjourned until after the scrutiny had been completed.

At the adjourned meeting, Mr. WALTER HILLS, President, in the chair, the scrutineers presented the following report :—

Scrutineers' Report.

We, the undersigned Scrutineers, appointed at the thirty-second election of Annuitants on the Benevolent Fund of the Pharmaceutical Society of Great Britain, do hereby certify that we have examined the voting papers committed to us, and report the following results :—

Board, Mary	5,110
Linford, Eliza Sarah	10,535
Ramsden, George	4,860
Young, Tonkin	4,741

4219 voting papers* were received, of which number 57 were informal (34 unsigned, representing 107 votes, and 23 incorrectly filled up, representing 46 votes).

EDWARD N. BUTT, *Chairman.*

W. ARKINSTALL.	CHAS W. MATTHEWS.
WM. W. BAKER.	A. J. PHILLIPS.
HENRY BATE.	THOS. HY. POWELL.
HENRY C. BIRCH.	H. H. PRESBURY.
E JOHN BULL.	W. PRIOR ROBINSON.
WALTER T. COOPER.	EDWD. B. STAMP.
F. W. FREEMAN.	S. A. STURTON.
JOHN HOLDING.	T. MORLEY TAYLOR.
W. KING HOPKIN.	W. WARREN.
D. R. JACKS.	H. WIGGINS.
D. L. LEWIS.	R. FISHER YOUNG.

* 6307 voting papers were issued.

The PRESIDENT then declared the following duly elected annuitants :—

Board, Mary.
Linford, Eliza Sarah.
Ramsden, George.

The PRESIDENT, speaking on behalf of the Council as well as for the members of the Society and subscribers to the Fund, thanked the scrutineers for their services in coming there and doing so much work for the Benevolent Fund, and a vote of thanks to Mr. E. N. Butt for officiating as chairman of the scrutineers having been carried by acclamation, the proceedings terminated.

EVENING MEETING IN LONDON.

The second Evening Meeting of the Society was held on Tuesday, December 8, the chair being taken at 8 o'clock by Mr. WALTER HILLS, President. The first paper, on "The Estimation of Quinine," by Mr. David Howard, is printed at page 505. The paper was read by Mr. D. L. Howard, jun., who, on his father's behalf, expressed his great regret at being unavoidably absent.

At the conclusion of the paper,

The PRESIDENT said the subject was one of great interest and importance to pharmacists, and he hoped to hear some remarks on the paper from practical men.

Mr. CHAS. UMNEY, after expressing his pleasure at seeing Mr. D. L. Howard, and the hope that they would often see him again, said the paper would be very valuable when studied, but he had hardly been able to follow it closely enough to say much about it. The efflorescence of quinine under heat was very important, especially to commercial men. Only a short time ago when a parcel which had been sent to America and returned was examined, it was found that each tin was 2 oz. or 3 oz. short in weight. The question arose as to what had become of it, but on his son carefully examining it he found that all the seals were unbroken, and a considerable proportion of the water of crystallisation had been lost. The quinine instead of being 100 per cent. was really 102 or 103, so that those who bought it got very good value. It was therefore very essential in taking quinine for experiment, to be sure, if it was supposed to be of B.P. standard, that it had 15·2 per cent. of water of crystallisation in it. It was perhaps as well to get anhydrous sulphate first, so as to be sure of having the right starting point. He looked forward to seeing the results of these investigations, or some of them at least, embodied in the coming pharmacopœia. At present 5 per cent. of sulphate of cinchonidine was allowed, and he should like to see that percentage slightly reduced, say to 2 or 3 per cent. They could not expect to get a commercial article purer than that, except at such a high price as would hardly be compensated for by the extra purity.

Dr. ATTFIELD said every student of practical chemistry knew the enormous difficulty of separating closely allied substances, and the alkaloids of quinine were no exception to that general rule. Mr. Howard had been kind enough to give him during the past six months the results of his investigations, and he had, therefore, had the opportunity of going through most of these processes, and was able to say that every one of the statements in the paper could be thoroughly relied on. With respect to the ease with which quinine sulphate yielded up its water on crystallisation, he had himself seen the lids taken off huge tins, measuring several square feet in Messrs. Howard's factory, and had noticed quite a bedewment of moisture inside. This fact was well recognised by manufacturers, and he should not wonder if they sometimes sent out the crystals just a little damp in order to meet this tendency. The new Pharmacopœia would no doubt have the benefit of Mr. Howard's knowledge on this subject, but he might point out that there was a little practical difficulty in the way of many retail pharmacists, for whose use the Pharmacopœia was undoubtedly primarily intended. Few such men were able to dry the alkaloid at the temperature of 105° to 110° C., which was desirable if the precipitate were to be weighed in a definite condition. Chemists who had the advantage of working in well-appointed laboratories would not find any difficulty in this matter, but he had been told that many pharmacists, while they possessed good water ovens, had not the means of drying such a substance as quinine at a temperature above that of boiling water, and he had been asked whether the alkaloid could not be dried at a temperature of 212° F., if a longer time were allowed. He had replied in

the affirmative, that if the precipitated quinine were dried for some two or three hours at that temperature, it might be taken for granted that the whole of the water would be driven off; but they must continue the drying until the precipitate ceased to lose weight. Having, however, always had the means of drying at the higher temperature, he did not feel quite certain on this point, and should like to hear Mr. Howard's opinion about it. There was another mode of going to work—viz., drying at a much lower temperature, and weighing the quinine, not as anhydrous, but as containing one molecule of water of crystallisation. But that again was an operation not very easily carried out, as there was some difficulty in maintaining an even temperature even in a water oven, somewhat under the boiling point. It would be more convenient all round if prolonged drying in a water oven, with the water kept boiling, would render the precipitate anhydrous.

Mr. John Umney said there might be some misconception as to the ease with which quinine sulphate lost water at ordinary temperatures. When it was stored at a temperature not exceeding 60° F. it would retain practically all its water of crystallisation for five or six years. At any rate he had recently examined some which had been kept in a London warehouse for six years, and found the water was equal to 14·7 per cent. It was not so much a question of time as of temperature.

Mr. D. L. Howard, having expressed the pleasure it gave him to be present, and the hope that he should see more of the Pharmaceutical Society in the future than he had in the past, said his experience agreed entirely with that of Messrs. Umney as to the ease of exsiccation of quinine. He should, however, be disposed to put the temperature at which it could safely be kept rather lower than 60° F. There was no doubt about the rapidity with which ordinary quinine sulphate would lose water if it were kept in anything like a warm place. If a pharmacist put a number of bottles sealed in the ordinary way, on a shelf above the level of the gas bracket, he would probably find, on turning them out, after a few months, that they would only weigh 400 grains, or perhaps 395, instead of an ounce. He had some phials returned recently, and found that they had evidently been kept in a warm place, the corks having shrunk under the wax, and two or three were exsiccated down to 5 per cent. of moisture. Of course all the quinine was there, and if required for making pills, all the maker would have to do would be to ascertain the amount of moisture, and act accordingly; but this drying process completely spoiled the appearance of the salt. Even if a little were exposed for a day or two on a piece of paper, to dry air at the ordinary temperature, it would become an opaque mass, very friable, almost a powder, in fact, very heavy, and if replaced in the phial would not more than two-thirds fill it. It was very difficult to get sulphate of quinine to maintain its exact percentage of water—more difficult than anyone would imagine who had not had experience in drying a batch every day under varying circumstances of weather. If it contained more than 16 per cent. of moisture it was wet and clammy, and liable to go mouldy; below that percentage it would go down without any warning, there being no special tendency to stop at 15 2. He did not know why that point had been selected, and in one Pharmacopœia, he believed the American, the hydration was put as high as 16·18. With regard to the difference in cost between reasonably pure quinine and that chemically pure, he might say that in German price lists the difference in price for Pharmacopœa Germanica No. 2 and No. 3 was something like 25 per cent., and the extra cost of refining it to make it pass the very severe test of the third German Pharmacopœia was not much more than paid for by the higher price asked. With regard to Dr. Attfield's question it was of course better if possible to dry at such a temperature as would ensure getting an anhydrous sulphate, and still more so in the case of the alkaloid, which was less easily dried. In the former case a fair approximation might be made by simply air drying; when it no longer lost weight at 60° or 65° F. it would retain about 4·9 or 5 per cent. of moisture only; but that was not very accurate, and he should not recommend it. He thought a far longer time than two or three hours would be required at 100° C. to ensure its being anhydrous. Personally, he never liked to take less than twenty-four hours for the alkaloid in an oven at about 100° to 103° C. There was another difficulty if you were dealing with a recently-precipitated wet alkaloid, either pure quinine or cinchonidine containing a considerable amount of quinine; if it were dried too rapidly it was apt to get into an almost resinous mass, from the interior of which it was very difficult to get the moisture. It was therefore advisable to dry it partially at a moderate temperature first, before putting it in the hot cupboard.

The President then proposed a vote of thanks to Mr. Howard for writing the paper, and to Mr. D. L. Howard for reading it, and for the interesting and practical remarks he had added. This was carried uanimously.

The next paper was on "Myrrh and Gum Arabic," by Mr. E. M. Holmes. It is printed on page 507, and gave rise to the following discussion.

The President said he still felt somewhat uncertain as to the source of myrrh in pharmacy, and in furtherance of the concluding remarks in the paper he would suggest that any young pharmacognosists who were about taking a holiday, should go to Somaliland, and endeavour to clear up the mystery. They were much indebted to Dr. Schweinfurth, one of the corresponding members of the Society, for the beautiful specimens he had sent.

Professor Greenish said this subject of the identification of the source of myrrh had an especial interest for him. Some months ago, Professor Schweinfurth read a paper before the Pharmaceutical Society of Berlin on this subject, and having some doubt as to the accuracy of some of the statements then made (to which Mr. Holmes had referred), he (Professor Greenish) endeavoured to procure samples of the plants Professor Schweinfurth had brought home, which he believed to be myrrh, but did not succeed. Shortly afterwards he saw a remark in the Journal of the Berlin Pharmaceutical Society to the effect that in England we did not yet seem convinced of the accuracy of Professor Schweinfurth's statement on this point; and the paper now read seemed to show they were wise in entertaining some doubts. On reading that he set to work on a line totally different to that of Mr. Holmes, but pressure of work compelled him to abandon the investigation before he had gone far. He collected from cases of myrrh a number of specimens of the bark which was found here and there in them, with the myrrh actually attached, and he thought possibly some light might be thrown on the subject—first, by comparing them anatomically with the smaller herbarium specimens now shown, and seeing if there were any differences in the structure which would enable a distinction to be made; and, secondly, by ascertaining whether the bark found in the cases corresponded to any of these specimens. This was somewhat difficult, because he found the pieces of bark in the cases were always rather large; he had no small twigs which could be compared with the small herbarium specimens. Possibly, however, by further examination, some small twigs might be found. Mr. Holmes had taken all the species he could lay his hands on, and excluded those which he concluded could not yield myrrh, all but one being comparatively free from bitterness. The gum resin being contained in large quantity in the bark of the tree, it naturally followed that if a bark contained myrrh it must be bitter, though it did not follow necessarily if a bark was bitter that the gum resin obtained from it would be bitter; it might, or it might not. It seemed to him quite possible that there might be other species which yielded myrrh, with which they were at present unacquainted. He therefore thought anatomical and histological research in this matter might prove useful, and hoped to be able at some future time to undertake it. He should also like to point out in the interest of students, how important it was that the descriptions of drugs, whether leaves or gum resins, should be as accurates as possible. It was by comparing genuine known specimens of such gum resins with other substances which resembled them more or less closely, that certain characteristics could be observed which distinguished the genuine drugs from the others, and, after all, that was the point of most importance in pharmacy, to which the identification of the botanical source was more or less secondary.

The President asked if the *Balsamodendron* and *Commiphora* were the same genus, or different. He used to be taught that the source of myrrh was *Balsamodendron*, but the other name seemed now to be more in use.

Mr. Holmes said it was now the rule with botanists that every plant should have but one name, and no alias; and the principle adopted was to take the first published name, after the issue of Linnæus' binomial system in 1753, provided it fairly-well described the plant. They therefore went back to the oldest known names, according to the view they held of the genera. Schweinfurth might hold the myrrh plant to belong to one genus, and another botanist to another; but the most recent monograph on the genus *Balsamodendron* had relegated it to the older name of *Commiphora*, which was considered to include all the species. This name *Commiphora* had been adopted in the Kew 'Index,' which if not free from

mistakes, was a most convenient standard, and most botanists followed it. He quite agreed with the remarks of Professor Greenish, and hoped he would be able to make use of the specimens now shown. There could be no better use for specimens in a museum than to turn them to account in increasing the knowledge of science, and no one was better qualified to do that than Professor Greenish. Such an investigation would be the best supplement to the work he had done, which he could desire.

The PRESIDENT then proposed a vote of thanks to Mr. Holmes, which was carried unanimously.

DONATIONS TO THE LIBRARY AND MUSEUM.

At a meeting of the Library, Museum, School and House Committee, held on Wednesday, the 9th inst., the Librarian presented the following report of donations :—

To the Library (London).

Geological Survey of Canada:
Annual Report, n.s., vol. 7, 1894, with maps.

University College, London:
Calendar, 1896.

Royal Society of New South Wales:
Journal and Proceedings, vol. 29, 1895.

St. Bartholomew's Hospital, London:
Statistical Tables of Patients during 1895.

H. M. Secretary of State for India:
Index to Watt's Dictionary of the Economic Products of India.

Direkteur van 'sLands plantentuin te Buitenzorg:
Verslag, 1895.

To the Library (Edinburgh).

H. M. Secretary of State for India:
Index to Watt's Dictionary of the Economic Products of India.

American Pharmaceutical Association:
Proceedings, vol. 42, 1895.

The following report of donations was presented by the Curator :—

To the Museum.

H. M. Secretary of State for India:
Index to Watt's Dictionary of the Economic Products of India.

Messrs. Evans, Lescher and Webb, London:
Specimen of adulterated Matico.

Messrs. Wright, Layman and Umney, London:
Specimen of spurious myrrh and of Turkey opium, containing lead in the form of shot.

Mr. M. Aflalo, London:
Specimen of Durra (*Sorghum vulgare*).

To the Herbarium.

Mr. P. H. Marsden, Liverpool:
Specimen of *Geranium sanguineum β-prostratum.*

CHEMICAL SOCIETY.

So far as one could judge by the published list of papers to be read there was every prospect of the meeting on Thursday, December 3, being pharmaceutically an uninteresting one. The entire evening was monopolised by the "organic" chemists, and to make matters worse, they seemed to forget the recommendation made some time ago that authors should endeavour to read their papers within a quarter of an hour each. The three large blackboards were in constant requisition, and at the end of two long hours the humble pharmaceutical brain was in a high fever from the effects of the interminable and bewildering formulæ. A number of ladies were present, and they sat the meeting out with commendable fortitude.

The first paper was entitled "Constitution and Colour," and was read by the author, Mr. Arthur G. Green. He says that all colouring matters are derivatives of anthrones or quinones, and he classifies colouring matters into two groups :—

1. Those whose leuco-compounds are not easily re-oxidised by air.
2. Those whose leuco-compounds are easily re-oxidised by air, or those whose leuco-compounds are only formed with difficulty.

The first group includes such bodies as triphenylmethane colours, phthaleins, indophenols, etc.; the second group indigo, etc. The substances in Group 1 have a para-quinoid structure, while those of Group 2 are ortho-quinoid.

The author then made some experiments with various colours of both groups, but they were tedious and not very satisfactory. Dr. Kipping, in the discussion which followed the reading of this paper, said that in order to attempt any classification of these colouring bodies, time, with reference to oxidation, ought to be taken into account. Dr. Kipping then performed an experiment where a yellow colour on a watch glass changes to red, and then on exposure to air, back to yellow, and he remarked that in this instance colour depended not on chemical constitution but on crystalline form. Dr. Kipping is the sworn enemy of the constitution and colour theorists, and he maintains that their theories are quite premature. He performed another experiment. This was a colourless solution in a test tube which, on boiling, threw out yellow crystals. Addressing himself to Dr. Armstrong he inquired if this was impurity. Dr. Armstrong, however, has strong faith in his own convictions, and being an able speaker, he treated Dr. Kipping, to whom he referred as his conservative friend, to some of his heavy artillery.

The next paper was on "Derivatives of α-Hydrindone," by C. Revis and F. Stanley Kipping, Ph.D., D.Sc. The authors had compared the behaviour of α-hydrindone and camphor, and they find that although the constitution of both is practically the same, so far as they know, there is a great difference in their behaviour. Hydrindone is characterised by a great tendency to condensation. Camphor behaves in a totally different manner, and why it should not condense is a mystery to the authors.

The next paper again brought on the subject of constitution and colour. It was on "Derivatives of Nitro-beta-naphthols," by W. A. Davis. Coloured derivatives are obtained, and as there is no quinonoid formation in these bodies there must be something in the background that the new theorists have not grasped.

When Professor Armstrong went up to the platform to read several other papers, he placed the time at which he began in large figures on the board, and then, when he had finished, made a small calculation, from which it was seen that he had read two papers in nine minutes. This was to impress the quarter of an hour limit on authors. The meeting then closed, one paper being taken as read :—"Some Experiments on Sea Water," by E. Sonstadt.

UNIFORMITY IN PHARMACY.*

BY C. F. HENRY.

Uniformity is one of the most important objects to be attained in pharmacy. That a preparation known by a certain name should be obtained of the same composition and strength at John o' Groats as at Land's End is most desirable. When chemicals, drugs or preparations are supplied of the same composition, strength, and appearance by all pharmacists, not only is public confidence gained and retained, but, what is of more importance, medical results are more uniform, doses more readily ascertained, and disease more easily overcome.

In cases where a different article, differing either in appearance, composition or strength is supplied to the public under the same name, not only in two separate towns but by two pharmacists in the same town, or it may be in neighbouring shops, public confidence is shaken, annoyance caused, and one or other, it may be both pharmacists, blamed or distrusted.

One of the objects of instituting pharmacopœias was to amend such a state of matters. That they have largely attained their object there can be no doubt, yet it is sometimes urged that by a different process or by different apparatus than is required by the B.P., the whole of the active principle can be obtained from a certain root, or at least more of it than can be got by the B.P. process. Again, commercial gentlemen, chiefly those representing American manufacturers, urge the claims of their particular preparations, because "they are stronger than the B.P."

Now, I submit that the principle to go on in this country should be the B.P., and nothing but the B.P. So long as it is the standard it ought to be the standard in reality, and not in name only. Uniformity should have the first claim. All commercial considerations should be of secondary importance. The question ought to be is it uniform, not does it pay? Because all the active principle is not extracted from a certain root or bark by the B.P. process the marc need not be thrown away as a waste product. Any deviation from the rule that uniformity to the B.P. should be carried out by chemists and manufacturers ought only to be allowable in regard to processes, but the strength, composition, and appearance of the finished product should be the same as the B.P.

There are several preparations, however, in the B.P., in regard to

* Read before the Edinburgh Chemists' Association.

which some doubt exists as to what should be supplied when they are prescribed or asked for. Several other preparations, not in the B.P., but in the same unfortunate position as the others, will also be referred to.

When considering this subject I thought it would be well to give the opinions of others also as to what should be supplied when certain preparations are prescribed or asked for. I therefore communicated with fifteen pharmacists in various districts of Edinburgh and Leith, and I take this opportunity of thanking those gentlemen for so kindly and courteously replying to the various queries submitted to them. These opinions will be mentioned as each preparation is discussed, my only regret in this connection being that uniformity, in regard to most of the thirteen preparations enquired about, is conspicuous by its absence.

Several of the preparations have more than once formed subjects for discussion in the trade press, such as when liquor taraxaci is prescribed, what should be supplied—the juice, the liquid extract, or the proprietary preparation? It should of course be the rule that the prescriber's intention in regard to this or any other preparation should be carried out if it be known to the dispenser, irrespective of the usual practice. In such cases a note should be made on the recipe as to what has been supplied. In this case opinion has generally been in favour of the juice. Personally, I favour the use of the liquid extract. Ext. sarzæ liquid. has for its B.P. synonym liquor sarzæ. Ext. tarax. liquid. should, therefore, mean liquor taraxaci. Unless the proprietary preparation is specially named, it should not, I think, be supplied. In reply to the query sent, ten pharmacists were in favour of the succus and five in favour of the liquid extract. It is to be hoped that the new B.P. will set this matter at rest.

The following two opium preparations are also subjects of doubt: pil. opii and lin. saponis co. In regard to pil. opii, pil. saponis co., which has for its B.P. synonym pil. opii, should be supplied if the Food and Drugs Act is to be strictly carried out. It is in such a case, however, that the prescriber's intention ought to be considered, and if that is that a smaller pill than the B.P., containing 1 grain of powdered opium and weighing about 1½ grain, should be dispensed, then it should be given. Provided that a 5-grain pil. saponis co. is supplied, the dose of opium is the same in both instances, and unless it is known that the prescriber intends the small pill, I would advocate strict adherence to the B.P. and the supply of pil. saponis co. This would satisfy the Food and Drugs Act and also promote uniformity in practice. Dispensers know (or should know) what the B.P. requires, but they do not always know the intentions of prescribers. In regard to this, five pharmacists would supply the B.P. pill when pil. opii is prescribed, six would give 1 grain pulv. opii in a small pill, three would give 1 grain gum opii in a pill, and one would supply ¾ grain pulv. opii in a 1-grain pill, which would be nearly equivalent to 1 grain of the gum. Four therefore would be in favour of one course, five of another, and six of a third.

What is lin. saponis co.? This is another old controversial subject. Arguing from the name of the pill just alluded to, "an Oxford student training for the law" might say pil. saponis co. is pil. opii, therefore lin. saponis co. must be liniment. opii. Whether such reasoning will bear scrutiny, the conclusion come to is, I think, correct. It has been said that lin. saponis co. is a compound liniment, but the same can be said for lin. opii. If the medical practitioner desires lin. saponis to be supplied, why should he add "co."? He evidently means a preparation differing from lin. saponis. From the replies received seven pharmacists favour the supply of lin. opii and eight of lin. saponis.

Another pill, the name of which creates doubt, is pil. asafœtida. Should the aloes and asafœtida or the compound asafœtida pills be supplied? I suggest that unless the aloes and asafœtida pill is clearly indicated, pil. asafœtida co. should be given. In the old Edinburgh Pharmacopœia, from which the present pil. asafœtida co. is derived, pills containing asafœtida and galbanum are named simply asafœtida pills. These pills became compound to distinguish between them and the aloes and asafœtida when the latter were introduced into the British Pharmacopœia. In this instance I am glad to record that more uniformity prevails. When pil. asafœtida is prescribed, ten pharmacists would give pil. galbani co., four pil. aloes et asafœtida, and one would be guided by the directions on the recipe.

Even more unanimity prevails in the dispensing of chloric ether; twelve pharmacists would dispense spirit of chloroform, and three would dispense the well-known preparation of an Edinburgh firm. I regret to say that I am one of the minority in this instance, as it seems to me that the older preparation should be given, as in nine cases out of ten it is probably what the prescriber wants, else he would have written spirit. chloroform. The older chloric ether, when asked for over the counter, should also, I think, be supplied, as it is doubtless what the customer wants and has been accustomed to get. If the Food and Drugs Act is conformed to, an explanation will of course be made to the customer, who will probably reply, "Oh, no; I don't want chloroform."

Although the present B.P. tincture of iodine is of little use for external application, it ought, I think, to be supplied in all cases when tinc. iodi. is prescribed. When this tincture is otherwise ordered, it would be better to ascertain the purpose for which it is required, and if for external use, supply the E.P. The desired effect will thus be more certainly attained. The label should, of course, indicate what the bottle contains. The question here asked was when tinct. iodi is asked for by a customer what would be given? Ten answered B.P. and five E.P.

When visiting Glasgow some years ago, I had occasion to purchase boric acid ointment in several shops, and on each occasion a yellowish preparation was handed to me. The yellow soft paraffin had evidently been used. The general practice in this city is to use the white variety in all cases where the ointment would be otherwise white, and the yellow in all other cases.

This, I suggest, is the better plan to adopt, as not only is uniformity in the colour of all such ointments ensured, but the ointment has a nicer appearance when prepared with the white than with the yellow paraffin. Only two replies to the fifteen queries sent on this point mention that yellow would be supplied. One or two of the answers do not specify which colour would be used further than B.P., and the B.P. admits of both. The question should have been more explicitly put by myself.

In the cases of acetic acid, vinegar, ether, ammonia, etc., what should be supplied depends upon the purposes for which they are to be used, and liquor arsenicalis, bismuth, etc., upon their compatibility with other ingredients in the recipe. The answers to the query as to extract. belladonnæ again show, however, a want of uniformity. Eight pharmacists are of opinion that when ext. belladonnæ is prescribed in ointments the green extract should be supplied, while seven would give the alcoholic. As the one preparation is about five times stronger than the other, this difference in practice is important, and might lead to serious consequences. No doubt those pharmacists who use the stronger alcoholic preparation do so because the B.P. ointment is prepared with it, but personally I do not think that they are justified in so reasoning. Ext. belladonnæ is the name of a pharmacopœial preparation, and refers to the green extract alone. Why should it not be given when prescribed? When medical practitioners wish the alcoholic dispensed, they could and would easily name it.

In regard to emplast. belladonnæ there is not so much diversity of opinion. In twelve cases, when emplast. belladonnæ is prescribed, the B.P. plaster would be spread on leather and supplied (our own make so to speak). In one instance the green plaster of the 1867 Pharmacopœia would be used, and in the other two instances a proprietary plaster would be given, although one of the two mentions that he does so only in the case of poor customers, spreading the B.P. for others. No doubt proprietary preparations spread on rubber or felt are often handed over the counter when these plasters are asked for by word of mouth. When this is done it would be well to bear in mind that the makers admit that they contain only belladonna and boric acid. As they contain no lead they are therefore not B.P., and it should be made clear to the customer that they are being supplied with a certain kind of plaster in order to keep clear of any infringement of the Act before referred to. The best plan, however, is for every pharmacist to spread his own plasters.

In dispensing magnes. calc. some pharmacists use the heavy, others the light magnesia. To ensure uniformity, and also to dispense the preparation most suited to the particular form of medicine required, the practice of other pharmacists should, I think, be adopted—viz., to give the light magnesia in mixtures, on account of its being more easily suspended, and the heavy magnesia in powders, as it has less bulk and can also be more readily mixed with other ingredients. Opinion on this point is, however, curiously divided; seven pharmacists would dispense the lev. in mixtures and the pond. in powders, seven would dispense the pond. in both cases, and one would dispense lev. in both cases.

The following are a few of the moot points which arise in regard to non-pharmacopœial names:—

First of all more uniformity would ensue if all dispensers would write "a small teaspoonful," "a small dessertspoonful," or "a

small tablespoonful," in all cases where the signs for ℥i., ℥ii., or ℥ss. are used by the prescriber. It is well known that ordinary teaspoons, dessertspoons and tablespoons are too large to be used as equivalents of these measures, and do not represent the dose intended to be given by the prescriber. In a three-ounce mixture containing twenty-four three-minim doses of solution of strychnine, the exact number of doses are much more likely to be got from the bottle when "a small teaspoonful" is written on the label than when simply "a teaspoonful" is directed to be taken. This suggestion, however, does not apply to bottles marked with divisions. In such cases "a tablespoonful," "one-twelfth," or "one-sixteenth part," as the case may be, is sufficient, provided that the divisions are correct, and the bottle is filled up to the neck, which by the way is not always attended to.

The following non-pharmacopœial preparations give rise to doubt, viz., medicated wool; ung. zinci. carb.; glycerin and boroglyceride, saturated; Hamilton pills; pil. ferri carb.; golden ointment; and lead and opium lotion.

For medicated wool I would suggest that sublimated wool be supplied, not ordinary cotton-wool or B.P. absorbent wool. The latter is rather a demedicated or unmedicated wool, if I may use these expressions. The article is generally asked for by nurses, and sublimated is the most commonly used of the antiseptic wools. I regret to mention that in taking this view I stand alone, eight pharmacists being in favour of supplying absorbent wool, and six in favour of ordinary cotton-wool.

Ung. zinci carb. is, I think, intended by prescribers to be a preparation of pure carbonate of zinc, prepared of the same strength as ung. calamin. Eight pharmacists would, however, dispense ung. calamin, while the other seven favour the supply of the pure carbonate. This prescription is one fortunately seldom met with, and whatever is intended by the prescriber should be carried out by the dispenser, if this can be ascertained.

Several pharmacists send out a white or milky preparation when sol. glycerin et boroglycerid. saturat. is prescribed. The boroglyceride is not in complete solution in such a preparation, and the use of glycerin and boroglyceride in equal proportions gives a clear saturated solution, which does not deposit at ordinary temperatures. The glycerin and boroglyceride should be gently heated until clear, and then kept tightly corked up, as owing to the hygroscopic nature of the glycerin, water is absorbed, in which the boroglyceride is not soluble, and from which it falls in flaky circles to the bottom of the bottle. The above proportions were found to be the best after many experiments.

For Hamilton's pills two preparations are given: one prepared from ext. col. co., 2 parts, and ext. hyoscamus, 1 part, and the other a 5-grain pil. col. et hyoscyam., B.P. This is not of much importance, but I believe that a 4-grain pill of the former is in accordance with the original recipe of Dr. Hamilton, jun.

As to pil. ferri carb., which has been put before me to refer to to-night, when so prescribed I think the B.P. pill should be given, unless the Blaud pills of the Addenda are clearly indicated.

Golden ointment is another article for which various preparations, differing in composition and colour, are supplied. In a recent discussion in the correspondence columns of the *British and Colonial Druggist*, a red oxide of mercury ointment, a yellow oxide of mercury ointment, and a dilute citrine ointment were all mentioned as being supplied when golden ointment was in request. The general opinion, however, was that the yellow oxide of mercury ointment of the strength of 1 grain in each drachm of simple ointment was the most suitable to supply under this name.

As to lead and opium lotion, various formulæ have been published, 4 grains of acetate of lead and 4 grains of powdered opium to each ounce of boiling water, either infused or boiled for some time, being the most common. The following receipt, as used in one of the City dispensaries, approximates to this strength and gives less trouble to prepare:—

℞ Acetate of Lead	4 grains.
Tincture of Opium	30 minims.
Water, to	1 ounce.

Dissolve and mix.

In conclusion, allow me to add one or two observations regarding preparations about which there is dubiety as to their supply. (1) In very few does the medicinal effect differ to any great extent. (2) Medical practitioners might do much to remove the uncertainty which occurs by being more explicit in prescribing, by using exact B.P. names, or by adding B.P. in cases where these two letters would remove a doubt as to what is intended. (3) The synonyms in the B.P. might be extended with advantage so as to assist both prescriber and dispenser in cases of doubt. (4) For the benefit of their fellows and of uniformity, dispensers might oftener note on prescriptions what has been supplied for those medicines in regard to which two or more preparations might be given.

Discussion.

In the discussion which followed the reading of this paper,

Mr. Sinclair said with regard to boric acid ointment, the Pharmacopœia was the source of confusion, because it recognised both white and yellow soft paraffin, and gave no indication as to the rule to be followed in their use. He should give B.P. tincture whenever tincture of iodine was asked for. The proportions for Hamilton's pills should be two parts extract of colocynth and one part extract of henbane. In the case of ung. hydrarg. flav., he thought it was Pagenstacker's formula that was intended, made with the precipitated oxide of mercury.—Mr. Lunan said when aq. menthæ was prescribed in England, the rule was to give aq. menth. virid., whereas in Edinburgh they gave aq. menth. pip. The B.P. should have a prior claim to that of any commercial consideration, but attention must also be paid to the desire and intention of the prescriber. In the case of belladonna plaster he believed the doctor wanted a porous rubber plaster, and would object to his patient being supplied with the ordinary plaster spread on sheep-skin. Liquor taraxaci was prescribed before 1885, and then he thought the liquid extract was meant. It was more definite than the succus, because fresh dandelion root might contain an indefinite quantity of water. He agreed with Mr. Henry as to tincture of iodine. Of course, in a prescription the B.P. tincture would always be used. For lin. saponis co. he would supply lin. saponis, B.P. For chloric ether he would supply sp. chloroformi, as it was synonymous in the B.P. For unguent. and emplast. belladonnæ he thought the alcoholic extract of the root should be used. For lead and opium lotion he would use 4 grains of each to the ounce. Sometimes he found the prescriber wanted it filtered and sometimes not. Medicated wool, he thought, was simply absorbent cotton.—Mr. Reid asked if it was proper to use boroglycerin when boroglyceride was ordered? Must they not use Barff's boroglyceride?—Mr. Lunan said only if it was ordered; when boroglycerin was ordered he would use Squire's formula.—Mr. Reid thought lin. saponis should be supplied when lin. saponis co. was ordered.—Mr. Macdougall said a ready way to make lead and opium lotion was to use one ounce of laudanum and five ounces of liq. plumbi subacet. dil. For golden ointment it was usual to give red precipitate ointment diluted with lard or soft paraffin in the proportion of 1 to 8.—Mr. C. A. Macpherson said when pil. opii., gr. i., was ordered they should give one grain of B.P. opium. Pil. saponis co. might not contain one grain of opium and the patient might suffer. As to asafœtida pills, colloquially aloes and asafœtida pills were known as asafœtida pills. Medicated wool was absorbent wool. For ung. zinci carb. he would give calamine ointment, and for chloric ether, sp. chloroformi, unless Duncan, Flockhart and Co.'s preparation were specified. Lin. saponis should be dispensed when lin. saponis co. was ordered, and tinct. iodi. B.P. unless when the Edinburgh Pharmacopœia preparation or a strong tincture was required. He agreed with the plan of using white soft paraffin for white ointments, and the yellow variety in other cases. In regard to belladonna plaster, the B.P. plaster should be supplied unless otherwise indicated. For sweet oil he would give rape oil unless when a fine oil was specially wanted, when he would give olive oil.—Mr. Currie said when belladonna plaster was asked for over the counter the public expected porous plaster, but when prescribed, the B.P. plaster on leather should be dispensed. For golden ointment the ointment of red oxide diluted with soft paraffin should be given; but if for veterinary purposes the ointment of red iodide of mercury was probably wanted. For ung. zinci carb. he would give calamine ointment.—Mr. Boa thought liq. taraxaci in a prescription meant the succus, and lin. saponis co. soap liniment. Pil. opii, gr. i., in a prescription meant one grain of opium made into a small pill. He did not agree as to the suggestion that the word "small" should be added on labels before the words tea- or table-spoonful. Medicated wool was absorbent wool, and formerly ordinary cotton-wool. If ext. belladonnæ was ordered in a prescription for making an ointment he would use the ext. belladonnæ of the B.P., made from the leaves. If a prescriber wished the ointment made with alcoholic extract, he could prescribe ung. belladonnæ.—Mr. Hill had recently seen laudanum which did not contain more than three or four grains of opium in each ounce. It was not sold by a chemist. A medical practitioner had handed to him two samples of tincture

of digitalis, one perfectly inert whilst the other produced the desired action. This was want of uniformity of a very serious kind, and in this instance had nearly cost the life of a patient as well as the reputation of a medical practitioner. There was an evident want of uniformity in Mr. Henry's statistics, and the discussion had shown that among the speakers the same variety of opinion existed. It was eminently desirable that a common rule should be devised if possible for the guidance of practical pharmacists.—The Chairman, in moving a vote of thanks, said it was a good rule to use light magnesia for mixtures, and heavy magnesia for powders. Boric ointment should be white. Tinct. iodi, B.P., should always be given. Pil. opii, gr. i., meant one grain of opium in a pill. Genuine calamine of good quality could be purchased in the market by paying the proper price for it. Instead of a small teaspoonful he would say a measured teaspoonful. As to digitalis, they should use the home article, and not got to Germany for it.—Mr. Boa said he had on one occasion sold a graduated measure for teaspoonfuls, and it was returned with an emphatic message that it was all wrong. Since then he had given up writing "a measured teaspoonful." The vote of thanks was heartily passed, and Mr. Henry in reply said he agreed that the B.P. should be a guide, but they must also follow the desires of the prescriber. He thanked Mr. Reid for his information as to lin. saponis co., and was now inclined to believe that lin. saponis was the right thing to supply. He still held to his opinion that it was wise to put "small teaspoonful" on a label when accurate dosage was necessary.

LITERARY NOTES.

The Pharmacopœia of the Royal Infirmary, Edinburgh, has reached a second edition, the new editor—Mr. Thomas Alexander—having found it necessary to extend the little book by forty-seven pages. Many alterations and additions have been made, while a section referring to the outdoor department of the Hospital for Sick Children has been introduced, together with a complete index, which constitutes a most useful addition. Synthetic preparations are but sparsely represented, and the "latinity" of the British Pharmacopœia is again followed. Pending the issue of the new B.P. it would have been unwise to alter either this or the system of weights and measures, though changes in these directions will presumably be made in the third edition, after the new B.P. appears. The book is published by Mr. James Thin, South Bridge Edinburgh.

'Pears' Annual' for Christmas, 1896, is a most attractive publication, Messrs. A. and F. Pears, of New Oxford Street, having excelled their previous best production of this kind. During five successive seasons Charles Dickens' "Christmas Carols" have inspired the firm's artists, and now appears a story by George R. Sims, entitled "Once Upon a Christmas Tide," beautifully illustrated in colours by such well-known artists as Charles Green, J. C. Dollman, Frank Dadd, Hugh Thomson, and others. The Annual, which reflects great credit on the publishers, is wholly printed in England, not the least point in its favour in these days of international competition.

Buck's 'Medical Lexicon' goes easily into the vest pocket, and yet embraces the majority of terms and abbreviations which are commonly found in the medical literature of the day. Dr. A. H. Buck, in compiling the little work, has drawn his material from sources of unimpeachable authority, and his attempt to supply medical students and busy practitioners with a new dictionary in compact form appears to be an unqualified success. The type employed for the names of the terms defined is excellent and, standing out boldly from the rest of the text, catches the eye at once. The accentuation is also carefully marked, and the definitions are as brief as consistent with accuracy. The book is published at three shillings net by Messrs. Baillière, Tindall and Cox, King William Street, Strand, W.C.

NOTES AND FORMULÆ.

Insecticide for Plant Lice.

An effective insecticide for various insect pests on greenhouse plants is composed of methylated spirit, 200; soft soap, 20; quassia wood, 6; salicylic acid, 2½ parts. Macerate for several days; dilute with sufficient water, and apply to the infested parts by means of a brush. Allow to dry on; the following day wash off with plenty of water.—*Rev. Méd. Pharm.*, iii., 301.

Protection of Iron from Rust.

It is stated by Deninger (*Revue Scient.*) that by applying a solution of a soluble ferrocyanide to the bright surface of iron a homogeneous and impermeable pellicle of ferrocyanide of iron is formed which protects the surface from oxidation, and so prevents the formation of rust. The solution of ferrocyanide is mixed with a linseed oil varnish containing a small amount of benzol or of turpentine in such manner as to form a homogeneous emulsion. The iron to which this mixture is applied needs no preparation beyond removing any very thick patches of rust which might resist the action of the ferrocyanide.—*Rev. Med. Pharm.*, iii., 301.

Carbon Tetrachloride as a Cleansing Agent.

By reason of its solvent action on tar, grease, paraffin, stearin, etc., and the uninflammable nature of its vapour, tetrachloride of carbon is well calculated to replace petroleum as a cleansing agent. It may be used combined with petroleum, the inflammability of which it materially lessens. The tetrachloride also combines with alcohol, ether, oils, and soaps. It combines with benzene soaps, and may, by suitable treatment, be invested with considerable washing power; this effect is increased by the addition of ammonium chloride. In removing grease spots, carbon tetrachloride is preferable to petroleum spirit, since it does not leave marks round the edges of the greasy places. It appears to be without action on the colour of fabrics dyed with aniline dyes.—*Journ. Soc. Chem. Ind.* xv., 589, after *Neuerste Erfind u. Erfahr.*

Sterilising Catgut.

The following method of sterilisation with formalin and hot water is recommended by Hofmeister. An important point to be observed is that the fibres must be strongly stretched, and the free formalin thoroughly removed before heating, as the thread will otherwise be brittle. The catgut which is drawn over a special glass plate (9 × 17 Cm. projecting at the sides) is laid in a formalin solution of 2 per cent. to 4 per cent. from twelve to forty-eight hours; it is then washed in running water for at least twelve hours, afterwards boiled for ten to thirty minutes, finally hardened and preserved in absolute alcohol, with 5 per cent. glycerin, and 1 per cent. sublimate, or 4 per cent. carbolic acid. It has been proved that this process does not injure the elasticity of the catgut, and is to be recommended on account of its simplicity and cheapness.—*Munch. Med. Woch.*, xliii., 804.

New Test for Nitrites.

In order to test for nitrites, a small drop of the liquid is mixed on a white slab with a drop of concentrated sulphuric acid and a few particles of cuprous oxide; a very intense violet purple coloration is produced in their presence. All cuprous salts produce the same reaction, but in the case of the dry chloride of copper the colour forms more slowly. The colour slowly disappears even in sealed tubes out of contact with the air. This reaction is not so delicate as that with metaphenylenediamine.—*Journ. Chem. Soc* lxx.; *Analyst*, 623.

PHARMACEUTICAL JOURNAL.

A Weekly Record of Pharmacy and Allied Sciences.

ESTABLISHED 1841.

Circulating in the United Kingdom, France, Germany, Austria, Italy, Russia, Switzerland, Canada, the United States, South America, India, Australasia, South Africa, etc.

Editorial Office: 17, BLOOMSBURY SQUARE, W.C.

Publishing and Advertising Office: 5, SERLE STREET, W.C.

LONDON: SATURDAY, DECEMBER 12, 1896.

A DANGER IN HOSPITAL DISPENSING.

A RECENT fatality in the Monsall Fever Hospital directs renewed attention to a practice which, whilst undoubtedly effecting considerable saving of labour, is yet attended by considerable risk unless extreme precautions are observed by everyone concerned. We refer to the custom that prevails in institutions where large quantities of certain solutions are in constant use, of preparing those solutions in a concentrated form, as by this means time is economised in compounding a given quantity of a solution. Thus, a gallon of a concentrated preparation probably takes no longer to make than one of the ordinary solution, whilst the space available for storage is utilised to much greater advantage than would be the case were, say, eight gallons of the ordinary solution to be kept ready instead of one of the concentrated. The proportion of one to eight, or a multiple or sub-multiple of this, corresponding to the relation between the fluid drachm and the fluid ounce, is the most convenient generally, and is adopted whenever practicable. When required for use all that is necessary is to dilute one fluid part of the concentrated preparation with seven fluid parts of water or other suitable diluent, and a solution is obtained of the requisite degree of strength. As regards the desirability of this form of solution, so long as those who dispense the preparations are individuals who also compound them, or are continually using them, the risk of mistake is very slight. But the introduction of another factor, by supplying concentrated preparations to nurses or patients for dilution as required, puts a totally different aspect on the case, and correspondingly increases the attendant risk.

This point is very clearly exemplified in the case which has just come before the Manchester Coroner. A boy of eleven, living at Cheetham Hill, had been admitted to the Monsall Fever Hospital suffering from scarlet fever. The medicine prescribed for him contained quinine and strychnine, and apparently a concentrated (1:8) preparation of this nature, kept in the ward, was used by the nurse in charge. The dose of strychnine intended appears, so far as can be gathered from the vague reports to hand, to have been four drops or minims of strychnine solution, presumably liquor strychninæ hydrochloratis, B.P., but according to the evidence the nurse took an ounce instead of a drachm of the stock mixture, and administered it to the patient, with a fatal result. In answer to the Coroner, the nurse said she thought she had mistaken the medical signs on the bottle containing the mixture, and from remarks subsequently made it appears that the fact that one drachm of the contents represented four minims of strychnine solution was indicated on the label by means of such symbols as are used in writing prescriptions. The Coroner spoke very decidedly on this point, remarking that although medical men were used to those signs, and found them simple to interpret, they were quite out of place on labels intended for attendants of the sick to read, and he insisted that quantities should invariably be written in plain English, as there would thus not be the same possibility of error.

It is quite probable that the mistake which occurred on this occasion was due to the use of symbols rather than words on the label, as the Coroner suggested, but the fact remains that similar mistakes may easily occur when the fullest precautions are taken in this respect, if concentrated preparations are placed in the hands of persons who have not been in a position to acquire the habit of mind which naturally comes to dispensers who are continually dealing with such preparations. Concentrated solutions, infusions, tinctures, etc., etc., may be quite in place in hospital dispensaries, and for the matter of that in pharmacies, but the great convenience their use affords in those places does not justify the compounding of mixtures in concentrated form, for dilution by nurses in the wards or by patients, when required for actual use. Except in rare cases, all medicines should leave the dispensers' hands ready for immediate consumption, properly labelled in plain English, and any delegation of the dispenser's duty to others ought to be strictly prohibited. The Manchester Coroner thought the nurse was to be sympathised with in this case, as the system employed invited mistakes, and he expressed the hope that the attention of the hospital authorities would be directed to the matter, so that the risk of mischance would be entirely obviated for the future. This much-to-be-desired result is not likely to be attained, however, by simply abolishing the employment of medical symbols on labels, for judging from the repeated instances of mischief that have arisen from ignorant handling of medicines by hospital nurses, nothing short of an entire reform in the methods that obtain in some hospitals will achieve what is necessary.

ARSENICAL SOAP—A CAUTION TO CHEMISTS.

WE understand that the authorities charged with the administration of the Food and Drugs Act are proceeding at various places to institute prosecutions of chemists for selling soap described as arsenical, which does not contain arsenic, while at other places it is contemplated to take proceedings under the 17th Section of the Pharmacy Act for selling an article professing to be a preparation of arsenic without complying with the regulations of the Act. Chemists may therefore be subjected to considerable annoyance in consequence, and until the questions involved are decided the sale of this article is attended with risk. Arsenical Soap cannot be treated on the same footing as medicine dispensed, but if arsenic is present the regulations of the Pharmacy Act as to labelling and registration would have to be complied with, and chemists alone could legally sell the article whether it is held to be a drug or not. Consequently the only safe course will be to stop the sale of the soap until a definite conclusion has been authoritatively arrived at.

ANNOTATIONS.

INDIAN OPIUM, if prepared in accordance with the requirements of the English market, would soon attain a better position than it occupied during the best days of the trade with China, and it would appear that steps are being taken by the Government of India to ascertain in what manner the necessary improvement may best be effected. A series of small specimens of Jeypore opium, sent to the Imperial Institute, yielded the following results on analysis by Mr Harold Brown, working on the dried materials:—

Specimen.	Morphine.	Narcotine.
"White"	5·0 per cent.	4·5 per cent.
"Soosin"	5·7 ,,	5·6 ,,
"Gulabi"	4·6 ,,	6·5 ,,
"White and Pink"	7·2 ,,	7·1 ,,
"Red"	7·75 ,,	7·1 ,,

Inasmuch as the Pharmacopœia stipulates that medicinal opium should contain from 9·5 to 10·5 per cent. of morphine—a comparatively low standard—and the proportion of narcotine present in the Jeypore opium is very high, it is clear that this particular Indian product is far from meeting medical requirements.

THERE IS NOTHING NEW in the results obtained. The report by Dr. Eatwell, published in the Journal forty-five years ago, showed much greater variations than the above in the constituents of the Indian drug, one specimen of Patna garden opium having yielded as much as 10·75 per cent. of morphine and 6 per cent. of narcotine, whilst the morphine contents of others sank as low as 1·75 per cent, and narcotine 0·75 per cent. More recently (*Ph. J.* [3], xxii., 252) Mr. E. M. Holmes has shown that there is no apparent reason why opium corresponding to the B.P. standard should not be produced in India. The selection of a suitable soil and climate, with improved methods of cultivation, appear to be the chief desiderata. To yield the best results in the cultivation of the opium poppy, the soil is said to require as careful preparation as for growing wheat, and it is probable that in this direction there is most room for improving existing methods.

PODOPHYLLUM EMODI has also engaged the attention of the Imperial Institute chemists. Mr. T. A. Henry has obtained from 9·06 to 12·03 per cent. of resin from specimens of this drug, as compared with 4·17 to 5·4 per cent. from specimens of *Podophyllum peltatum*. The "podophyllin" from the Indian drug is described by Mr. Dunstan as being much lighter in colour than that from the American variety, the explanation offered being that it contains 30 per cent. of a colourless crystalline substance "podophyllotoxin," while the commercial American resin contains on an average about 20 per cent. only. Since Dr. H. W. G. Mackenzie, of St. Thomas's Hospital, asserts that the two resins are identical in their medicinal effects, it is claimed, though no evidence is offered on this point, that "podophyllotoxin" can no longer be regarded as the chief active principle of the resin. Indeed, Dunstan assumes that the Indian drug is the more satisfactory source of the resin. This is the most novel point in the paper, for with regard to Henry's determinations, it may be observed that he has apparently done no more than confirm the results published by Dymock and Hooper (*Ph. J.* [3], xix., 585), and those of J. C. Umney (*Ph. J.* [3], xxiii., 207).

THE TERM "PODOPHYLLOTOXIN" is the cause of some slight confusion. The amorphous "podophyllotoxin" of Podwissotski consisted, as he thought, of a neutral crystalline principle "picropodophyllin" combined with or dissolved in "picropodophyllic acid," whilst he also found inactive "podophyllic acid" in the resin. "Picropodophyllin" was found by him to be inactive in the free state, owing to its insolubility, but in combination with, or solution in, "picropodophyllic acid" it proved extremely active. J. C. Umney confirmed these results, and pointed out that since Podwissotski's supposition—that the activity of podophyllin resin is dependent on the amount of "picropodophyllin" it contains, combined with "picrodophyllic acid"—seemed to be justified by facts, it was undesirable to employ *P. emodi* as an alternative source for the preparation of the official resin, because the product would contain only about half the quantity of crystalline "picropodophyllin" found in the resin obtained from *P. peltatum*.

KÜRSTEN'S RESULTS, which were of considerable importance (see *Pharm. Journ.* [3], xxii., 84) had apparently been overlooked by Umney. Podwissotski's amorphous "podophyllotoxin" yielded, in Kürsten's hands, another crystalline body of great physiological activity, which occurred in the root employed to the extent of about 0·2 per cent., and to which he suggested the name "podophyllotoxin" should be restricted. The question that now naturally suggests itself is—What is the body to which Dunstan applies the term "podophyllotoxin"? All that can be gathered from the scanty statement of results published in the *Imperial Institute Journal* is that the term is applied to a "colourless crystalline substance," and concerning this more information will be desirable. Can it be the acknowledged inactive "podophyllic acid," which Umney found to be present to the extent of 30·8 per cent. in the resin of *P. emodi* and only 6·9 per cent. in the American resin? But if so, why call it "podophyllotoxin," and speak of it as having been regarded as the "chief active principle of the resin"? Another point on which many of our readers will be curious is the reason why a research of direct pharmaceutical interest, commenced in the Pharmaceutical Society's Research Laboratory, should now be credited to the Imperial Institute.

'THE IMPERIAL INSTITUTE JOURNAL,' it may be noted by the way, is a clumsy, lumbering sort of production. Put together in a manner calculated to ruin the professional character of any journalist, it constitutes a model place of interment for any information of value. It has been suggested that the application of the X-rays might be found advantageous by anyone desiring to find matter known to be embodied in its pages; but, seriously speaking, why is the paper not properly edited and sub-edited, printed in readable type and on paper of a convenient size? Even the dreary official organs of Government departments are better arranged than this record of the proceedings of an institution that was expected by some to inaugurate the millennium of British commerce and bring about the apotheosis of the natural products of our Colonies and dependencies. These objects are excellent in their way, though difficult to accomplish except in exceedingly competent hands, and a sense of regret that the Journal of the Institute is not what it might be will be experienced by every well-wisher of the ambitious schemes represented in the concrete by the noble frontage down Kensington way. Of course it might be contended that there is no valid reason for the existence of the paper, but surely if everything turns out well in the future—and one must sturdily repress the insidious thought that perchance the schemes of the founders may prove as wanting in substantiality as the building one might suppose to be behind the aforesaid frontage—the official organ will be useful for spreading the glad tidings far and wide, whilst should it be the fate of the Institute to show once more that the best-laid schemes "gang aft agley," where could the fact of its approaching demise be more appropriately recorded than in the last number of its own official organ?

The Benevolent Fund Election has resulted in the success of the two female candidates and the elder of the two males, both of whom were making their second attempt to secure the comparative comfort afforded to annuitants on the Fund. The most striking feature of this contest was the unanimity with which the case of Mrs. Linford was supported, the total number of votes recorded for this unfortunate lady reaching the record number of 10,535, more than 5000 in excess of the next candidate on the list. In no former case has so many as 8000 votes been placed to the credit of a candidate. On the other hand, Mr. Ramsden secured a place by the narrow margin of 121 votes. It is to be hoped that the great interest manifested in this year's election may be the precursor of yet greater interest to be taken in the Benevolent Fund in future. The charitable impulses of pharmacists should be encouraged until the results attained secure the removal of the evils accompanying poverty in the case of every deserving pharmacist, or pharmacist's widow or orphan.

Since Mr. Wells has not disclaimed the utterances attributed to him in the report which appeared last week (p. 498), it may be assumed that he accepts the report as accurate, and it is only necessary before letting the matter drop to point out that "unfavourable comparisons" were undoubtedly drawn by him between the British and Irish examinations. In the first place the Minor examination was referred to (see p. 498) as "a much less severe test to that which pharmaceutical chemists in Ireland are subjected to." This is not borne out by facts; indeed there is every reason to believe that it is incorrect. Again, it was alleged that "In Ireland no man is permitted to dispense medicines with so slight a qualifying knowledge as secures the English Minor or chemists' and druggists qualification," and that "The Irish examination was an intermediate one between the English 'Minor' and 'Major.'" Finally, we have the statement that "on the whole the Irish qualification is the superior article." These quotations either imply that the British qualifying examination is inferior to the Irish or they mean nothing at all. Let us assume the latter position and forget the whole matter. The expressions were doubtless given utterance to in a moment of what was supposed to be justifiable indignation, and as such should be overlooked. Our brethren in the Green Isle have justified the grant of local legislation they sought for, and profited by it to the extent of securing for the licentiates of their Society a title admittedly more difficult to get here, but we do not begrudge their luck and only wish to remain the best of friends. So far as comparison is possible at all, however, we must continue to insist that the qualification of the British "chemist and druggist" is not inferior to that of the Irish "pharmaceutical chemist."

The Editor of "Truth" is extremely angry that his accuracy has been called in question, and in fact, has entirely lost his temper over this new Irish question. It was not denied in these pages that a representative of *Truth* may have been sent to the Pharmaceutical Society's office, but doubt was expressed (*ante*, p. 471) concerning the possibility of his having been told there what he says he was told—that the Pharmaceutical Society refuses to allow Irish licentiates to trade in England "because it is not satisfied with the Irish examination." No one in the Registrar's office would be likely to give such an absurd and incorrect reason, the "official in charge," whoever he was, being of necessity sufficiently well posted in the facts to know the real reason. Hence our suggestion that "Mr. Labouchere's young man invented the reply or went elsewhere for it," and this statement we still adhere to. That some Irish licentiates may have in specific cases failed to pass the British (not English) examinations is possibly correct, though no evidence is likely to be forthcoming on the point except from the rejected candidates themselves, but this does not affect the question in the least.

The Real Position of Affairs is this: At the time the Pharmacy Act, 1868, was passed, Irish pharmacists objected to unite with the English, Scotch, and Welsh. It was mutually agreed, therefore, that the Act should not extend to Ireland. Seven years later the Irish obtained their own Act, the provisions of which were purposely limited to Ireland, and at the present time the two Pharmaceutical Societies have respectively no power to accept the certificates of each other. Even to gratify Mr. Labouchere, therefore, the British Society could not permit an Irish pharmacist to practise as such in Great Britain. Not that it "refuses" to recognise the Irish qualification, but because it is legally incapable of doing so. An exactly similar state of affairs exists in Ireland, where British pharmacists are not allowed to practise, as Mr. Labouchere could easily have ascertained in the first place before instituting unfounded comparisons, and publishing his incorrect and mischievous statement. If any grievance exists it is on this side of the water, for the right to use the title of "pharmaceutical chemist" is granted in Dublin on much easier terms than in London or Edinburgh. But no one here wants to make a fuss on that account, and all we ask is that meddling busybodies outside the ranks of pharmacy should mind their own business and leave pharmacists to look after theirs.

"Views in the Himalayas," exhibited by Professor Collie by the aid of the lantern, should constitute a powerful attraction to the members of the School of Pharmacy Students' Association and their friends on Friday evening next, December 18. This will be the first social evening of the session, and it may fairly be anticipated that when the Dean, Professor Greenish, takes the chair at half-past eight, he will have no cause to lament the smallness of the audience. Admission will be by ticket only, and applications must be addressed to the Secretaries of the Association at 17, Bloomsbury Square, before Wednesday, December 16.

The "Illegible" Prescription, of which a facsimile appeared in last week's Journal, is satisfactorily explained by a correspondent this week. In connection with this, an unsigned postcard was received which causes one to hope that the writer is a tyro and an exception to the general rule of dispensers in this country. Though the prescription bore conclusive evidence of its foreign origin, this rash youth has attempted to transcribe it on the supposition that it was of home production. As a result he renders the first ingredient as "Finest oxydulous conf. sulphur," gives the quantities in the first two instances as "grs. v.," and in the third as "guttæ v.," and finally makes the directions read "One or two a day, followed by a mixture." It must be allowed that the prescription—written apparently for an English patient by a German physician—was none too easy to read, and that the difficulty of dealing with it was increased somewhat by the multi-lingual construction, but, nevertheless, it is extremely undesirable that vague guessing should be resorted to in dealing with matters involving the health and possibly the life of a patient

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The Davy-Faraday Research Laboratory, founded by Dr. Ludwig Mond, F.R.S., as a memorial of Davy and Faraday, is to be opened by His Royal Highness the Prince of Wales, on Tuesday afternoon, December 22, next. The ceremony will take place in the theatre of the Royal Institution, where by desire of His Royal Highness, Professor Dewar will show experiments illustrative of the use of liquid air in scientific research, after the opening ceremony.

THE WORLD OF PHARMACY.

BUSINESS MEETINGS.

Glasgow and West of Scotland Pharmaceutical Association, Thursday, December 3.—Mr. W. L. Currie in the chair.—The Hon. Sec., Mr. J. Anderson Russell, stated that he had received from Mr. Richard Bremridge the following letter:—

"The memorial of your Association as to the prescribing of proprietary medicines by medical men is still under consideration, and I am afraid I can hold out no very strong hope of any immediate decision being arrived at thereon. The whole question bristles with difficulties, and it is not quite clear what steps can be taken by this Society to check the practice complained of."

The Proprietary Articles Trade Association.

Mr. James Moir then proceeded to open a discussion on the desirability of supporting the Proprietary Articles Trade Association. He thought it worthy of support, and thought they should approve of its principles and give it their heartiest sympathy and encouragement. Already most of the wholesale houses and a considerable number of the manufacturers had joined, and it only wanted the mass of retailers to combine to support it to make it a thorough success. He had no doubt that if the retail trade rallied round it with anything like enthusiasm the men who were now standing aloof, till they saw how the wind blew, would support it in a body. In thus combining to protect its own interests, the drug trade was simply trying legally to do what was being done all around them. Many articles largely prescribed by the medical profession, and demanded by the public, could only be dealt in at a loss by chemists, and any remedy to place things on a better footing ought to be heartily supported. The gentlemen who could afford to treat this source of income with indifference were happy mortals, but they ought to have consideration for their poorer brethren. What chemists had to contend for was a fair profit. At the present time their profits were almost microscopical. They ought to get 20 to 25 per cent. That they could fairly demand, both from the manufacturers and from the public. If a uniform price were fixed they would know that nobody was underselling them, and the public would soon come to see that the same price was being charged all over. There would not then be the same inducement to go to the stores, and the trade would naturally revert to its old channels. He asked them to consider carefully the position they were in. They had an opportunity now of making their position better. That and other associations throughout the country should rally round the Association and give it their hearty support.

Mr. J. Anderson Russell said unfortunately the advocates of the P.A.T.A. appeared to be almost hysterical in their anxiety to have analysis of it confined to mere gilding. Where commodities were being sold by reason of excessive competition at a profit regarded as insufficient for the labour of distribution, and they desired to continue selling them, they gladly availed themselves of any honourable arrangement which would ensure to them an adequate profit. No condition was imposed upon them in such cases beyond the undertaking not to sell their goods under the prices stipulated, and they had the assurance that their competitors could act in no other way. Nor was it at all likely that, were all makers of proprietaries to come to them singly or unitedly, they would seek to evade such a condition or raise any objection to it. But in the case under consideration it was widely different. They were asked to join hands with the makers of proprietaries in an association to promote what it had pleased some to call their common interests. He did not see where the common interests, even financial ones, came in. The great bulk of proprietary medicines were declared in advertisements to be the best on earth, and the public were warned not to purchase anything else of a like nature, else they would have been imposed upon by having got something utterly worthless. Were chemists supposed to know nothing about their business, and unable to make up medicinal preparations? Chemists should sell their own preparations as much as they possibly could. If the P.A.T.A. were an association which confined itself to those things which they recognised as *bonâ fide*, they would not have the same objections. But they were asked to support an association which did not exclude things which they objected to deal in. He concluded by moving the negative.

Mr. James Robb thought it was a mistake to dictate to any man how he should sell anything, and, moreover, it was really a matter of money, and he did not think that the prices proposed were sufficient to recoup chemists for selling the things protected. If anything were to be done he thought each manufacturer should put a price upon the article he offered, and make it compulsory for everybody to sell at the face price.—Mr. Alexander Laing did not think anybody would deny that the aim of the P.A.T.A. was a right aim—to give them a fair working profit. But he did not consider it was their place by any artificial means whatever to procure goods so that they could sell them at a profit. It was the manufacturers' interest to place the goods in their hands in such a way that they could sell them at a profit.—Mr. Alexander Boyd said that to support the P.A.T.A. would be a most impolitic move on the part of the retail chemists. Manufacturers were now coming round to the chemists because they found that the stores were not their best friends. Some of the manufacturers who had made themselves prominent in the movement had suffered greatly through substitution, and that was no doubt the reason why they were coming round to the chemists. As educated chemists they ought to be able to make all the remedies that the public required, and should make it their business to educate the public to see that they were the right men to make those remedies. Mr. D. S. Robertson objected to having anything to do with the P.A.T.A. The trade in proprietaries was entirely opposed to their interests.—Mr. D. Watson also supported the negative, saying he thought that to join such an association would not in the long run be beneficial to them as chemists.—Mr. Thomas Robinson thought the P.A.T.A. had come to save chemists from losing a trade that was opposed by interests so gigantic that the attempt of chemists, as individuals, to stem them was useless. It was simply a question of capital *versus* private endeavour.

Mr. W. L. Currie said he was strongly impressed with the idea that the manufacturers of these proprietary articles had not the interests of chemists very much at heart. While they were very anxious to secure chemists a minimum price with a fair profit, they were also very anxious to secure to themselves the maximum addition to the profit they had, because in all cases where proprietors had joined the P.A.T.A. the wholesale price of these articles had increased. He was convinced that the whole object of proprietors and manufacturers in joining this Association was because the sale of their articles was going down to such an extent that they were compelled to do something to favour those who had been the means of creating a demand for their articles. Chemists increased the sale and caused a demand for these articles. They had pushed the sale of them, but when it came about that they got only 9½*d.* for an article that cost them 9¼*d.*, they did not care for it. He did not think they were wrong in trying to dissuade people from taking an article of that kind. They had brains sufficient to educate the public and to tell them that while these articles might be very good, they could give them something better. His own private opinion was that the Proprietary Articles Trade Association would not live many years, and he supported the negative side of the question.—Mr. Moir and Mr. Russell having replied, a vote was taken, when thirteen supported the negative, five the affirmative, and four remained neutral, whilst ten had left earlier without voting.

Bournemouth and District Pharmaceutical Society, Thursday, December 3.—Mr. G. E. Bridge, President, in the chair.—Mr. Bridge said the meeting of chemists residing in Bournemouth and district had been called to consider a difficulty attending the drug trade, which it was hoped the Proprietary Articles Trade Association would at least in a measure remove. Letters were received from Messrs. Randall and Son, Wareham; Mr. R. H. Groves, Blandford; Mr. Huntley, Wimborne; Mr. Seymour, Wimborne, and others, regretting inability to attend and expressing sympathy with the object of the meeting. Mr. W. Jones, in moving a resolution as follows:—

"That this meeting of chemists residing in Bournemouth and the neighbourhood desires to express its approval of the Proprietary Articles Trade Association, and pledges itself to support it, and urges upon all owners of proprietary articles the advisability of adding their goods to the protected list,"

said that the Proprietary Articles Trade Association was endeavouring to benefit the wholesale and retail traders and manufacturers alike, and deserved support. Mr. Botham having seconded the resolution, Mr. Park, of Plymouth, was called on by the Chairman, as being conversant with the subject, to explain the working of the Association, and in the course of his remarks demonstrated it to be the duty and interest of business men to give the Associa-

tion support. Messrs. BILSON, J. JONES, and MATTERSON having spoken in favour of the objects of the Association, the resolution was put to the meeting and carried unanimously.

Brighton Junior Association of Pharmacy, Wednesday, December 2.—Mr. A. T. JEEVES in the chair.—It was decided to give the votes (35) of the Association, for the Pharmaceutical Society's Benevolent Fund election, to Eliza Sarah Linford, as being the most worthy applicant. A vote of condolence to Mr. W. W. Savage on the death of his mother, Mrs. W. D. Savage, widow of the late Mr. William Dawson Savage, J.P., pharmaceutical chemist, was passed, and a letter received from Mr. W. H. Gibson, acknowledging the vote of condolence accorded to him at the previous meeting.

Liverpool Pharmaceutical Students' Society, Thursday, December 3.—Mr. J. JONES, President, in the chair.—A collection of prescriptions was exhibited by the President. Amongst these were several ordering lotio plumbi to be diluted with large quantities of water. The general opinion of the meeting was that the liq. plumbi subacetatis was intended by the prescriber. One prescription written by an eminent Dublin specialist had given Mr. Jones some little trouble in its dispensing, from the large amount of salts and the small proportion of aqueous menstruum it contained, and was only capable of being turned out satisfactorily on rubbing the salts to a fine powder, and putting a "shake the bottle" label on when finished. It ran as follows:—

℞ Potass. Citratis	℥v.
Acidi Citrici	℥ii.
Lithii Bromidi	℥ii.
Sodii Bromidi	℥iv.
Sodii Sulphatis	℥iss.
Succi Taraxaci, Succi Scoparii aa	℥ii.
Caffeinæ Citratis	℥i.
Infusi Ergotæ *Concent.*	℥iii.
Infusi Jaborandi ad	℥xii.

Misce. Sumat, ℥ss. ter die.

A specimen of wild colocynth fruit shown by Mr. T. H. WARDLEWORTH was an interesting evidence of degradation through non-cultivation—the seeds being so numerous that the pepos had the appearance of small short maize cobs. "Raki," an alcoholic cordial from Smyrna, flavoured with aniseed and mastic, was also exhibited by Mr. Wardleworth. It is interesting to know that the term "Raki" is applied in the East to any distilled alcoholic liquid, whatever its source may be, and that it and its derivatives, or rather its corruptions, arrack, rack, or saki are all derived according to the 'Pharmacographia,' p. 165, from sâqiz, the Turkish name for mastic. —Mr. W. A. COCKSHOTT was then called upon to read a paper on "John Dalton," at the conclusion of which he was complimented by the members generally on the very interesting character of his lecture, and the manner in which he had handled a by no means easy subject.

Pharmaceutical Society of Ireland, Wednesday, December 2.—Mr. W. F. WELLS, JUN., in the chair.—The Council, at this meeting, appeared unduly perturbed by Mr. Labouchere's recent statement in *Truth*. The Registrar read a letter, sent in reply to an official letter sent by him to Mr. Richard Bremridge, in which the Registrar of the Pharmaceutical Society of Great Britain stated that so far as he was aware the statement contained in the paragraph in *Truth* which had been inclosed to him was incorrect. Mr. WELLS read the paragraph referred to, and explained that a representative of the Dublin *Evening Telegraph* had interviewed him on the subject. With regard to the question as to who it was that gave the information to the representative of *Truth*, he thought that Mr. Bremridge's repudiation was anything but strong. The *Pharmaceutical Journal* in two editorial notes complained that he had made certain statements, and he had written a letter to that paper on the subject (see *ante*, p. 502). Mr. BERNARD thought that Mr. Bremridge's letter was not enough, as he did not vouch for what might have been said by others in his office, whilst Mr. CONYNGHAM made a brilliant suggestion which seemed to imply that the only way to obtain the desired information would be to "squeeze" it out of the British Registrar and his staff. Mr. BEGGS, however, made the sensible observation that there had been quite enough said about the matter. A further suggestion from Mr. CONYNGHAM—"Write to *Truth* and ask him for his authority"—elicited from Mr. WELLS the remark that it was not worth bothering about, as "you can never beat an editor." He thought it was the duty of the President of the Pharmaceutical Society of Great Britain, when a statement of the sort had been made, to have investigated the matter. After further discussion, Mr. BERNARD said they had only received a personal denial from Mr. Bremridge, and he moved that in the opinion of the Council an official statement should be given by the British Society as to whether there was any truth in the paragraph in question. Mr. BEGGS having seconded the motion, it was agreed to *nem. con.*, and other business having been disposed of, the Council adjourned.

Edinburgh Chemists', Assistants', and Apprentices' Association, Friday, December 4.—Mr. JAMES MCBAIN, President, in the chair.—Mr. C. F. HENRY read a paper on—

"UNIFORMITY IN PHARMACY."

and appears with the discussion that followed at p. 511 *et seq.*

BOTANY IN DECEMBER.

Mr. RUTHERFORD HILL made a statement designed to show how much material was available to the observant student in the wintery season and how many interesting conditions of plant life, not generally met with in the usual plant-hunting months, could be studied with interest and profit. The plants collected in a ten minutes' walk on an ordinary roadside included *Campanula rotundifolia*, with all the leaves rounded or rotund; *Conium maculatum*, three seedling plants, illustrating first year's growth; *Galium saxatile*, showing very bushy habit; *Leontodon autumnale*, rosettes of large radical leaves producing proteids and carbohydrates for storage in the large roots; *Symphytum cordatum* and *Rumex acetosella* illustrating the same phenomenon; *Syringa vulgaris* and *Ulmus montana* with winter condition of leaf and flower-buds; *Sonchus oleraceous* and *Taraxacum officinale* in flower and fruit, and *Ulex europæus* seedling plants showing cotyledons, primary ternate leaves, and gradual change in the direction of spiny or subulate leaves, and twigs of adult plant showing flower-buds ready to burst open at the first advent of mild weather.

CHLORAL AND ITS HYDRATE.

Mr. HILL also exhibited a quantity of chloral, and produced from it the solid crystalline hydrate by adding the molecular proportion of water.

Edinburgh District Chemists' Trade Association, Thursday, December 3.—Mr. JOHN BOWMAN, Leith, in the chair.—Mr. BOWMAN spoke on the subject of "Unfair Competition," observing that though there had been a great increase and diffusion of wealth during the last forty years, apparently it had not kept pace with the increase of the numbers participating and the enormous increase of facilities for spending it. Things that were formerly considered luxuries and only accessible to the rich few are now looked upon as necessaries and brought within reach of the many. This higher and wider range of living has forced upon heads of families almost the necessity of trying to pare down prices in order to spread the money over a larger number of commodities; hence the general demand of the public for cheapness and the traders' fierce competition in almost every line of business to meet it. So far as this process is being conducted on equal terms, no one has a right to complain. But all competition is not fair. It is not good either for pharmacy or the public weal, nor is it fair to the man who conscientiously qualifies himself for the vocation of pharmacist that he should have to compete with companies which have no interest in pharmacy, but exist solely for the purpose of wringing out a five or ten per cent. of profit. Companies managed by civil servants made some attempt at straightforward dealing. But no private firm would retain the services of servants who entered into competition with it, and it does not seem fair that servants of the State should be allowed to compete with those who are taxed to support them. Also the public is beginning to recognise that what they gain in one direction they lose in another. For instance, medicine, however urgently required cannot be obtained from stores from Saturday afternoon till Monday morning. Yet what can be expected from outsiders when chemists themselves are not loyal to the craft? These concerns, as far as dispensing forms a part, can only be carried on by qualified men who, for some slight temporary advantage, are lending themselves to parties who are doing their best to degrade the business for which they have been educated, at considerable pains and expense, to become proficient. By giving this assistance they are using the most effectual means of blocking their own

promotion. When the Pharmaceutical Society places a power in the hands of individuals it ought to have control over the misdirection of that power in doing anything inimical to the objects which the Society is striving to promote. But it is no easy matter getting the Legislature to move, chemists being numerically and politically a feeble folk. In co-operating with other corporations to have anomalies in the law amended, the Pharmaceutical Society should have cordial support.

Mr. D. McLaren (Vice-Chairman), in moving a vote of thanks to the Chairman for his address, said they must meet and deal with existing evils as best they could, and give the Society cordial support in every step that was taken to further their interest, whether by a clause in a short Act of Parliament or otherwise. He believed pharmacists had a great power if only they would use it in a united effort to uphold the dignity of their craft. In the matter of prices, he believed in fixing his prices and ignoring what was done by his neighbours. With regard to the more professional part of their work, he thought pharmacists should be well remunerated, and he would, therefore, uphold the charges for dispensing. There was no doubt that they had the lives of their clients in their hands, and for such responsible duties they had a legitimate right to adequate remuneration. The vote of thanks having been cordially passed, Mr. C. F. Henry, Hon. Secretary, then read a letter from the Inverness Chemists' Association, enclosing the following extract minute:—

> "Having regard to the supply of drugs, etc., by wholesale houses to the unqualified, to wit, the stores, the members of this Association recommend that chemists support only wholesale houses which do not actively trade with and for the store system.'

The Inverness Association had resolved that each association should be asked to co-operate and forward the recommendation to the neighbouring association.—The Chairman explained that this matter had been considered by the Committee. It would be very difficult, he thought, to say which wholesale houses did or did not in some way or other trade with the stores. They had much sympathy with the objects named by the Inverness Association, but the Committee feel that this was not a proposal in regard to which they could usefully take any action.—The opinion of the Committee was unanimously concurred in by the meeting, and the Secretary was instructed to reply to that effect.—The Secretary was instructed as to the disposal of the votes (20) of the Association for the Benevolent Fund election.—The Edinburgh chemists' annual ball was fixed to take place on Thursday, January 21, 1897, in the Freemason's Hall, George Street, Messrs. Boa, Bowman, Hendry, D. McGlashan, McLaren, and R. J. Macdougall, Convener, being appointed members of a committee to carry out the arrangements.

Midland Pharmaceutical Association, Tuesday, December 8.—Mr. F. H. Alcock, F.I.C., read the second part of a paper on "Vegetable Histology." He described the leading types of the division Cryptogamia, and greatly added to the interest of his remarks by a splendid series of lantern illustrations.

Proprietary Articles Trade Association, December 3.—Mr. J. Averill J.P., in the Chair.—A meeting of the North Staffordshire and District Chemists was held in connection with this Association at Stoke-on-Trent, and there was a good attendance of representative chemists from Stafford, Newcastle, Tunstall, Crewe, Longton, Stone, Hanley, Stoke, Eccleshall, Burslem, Uttoxeter, and Kidsgrove. Mr. Averill said he was sure the P.A.T.A. would commend itself to all present, and that they would assist it in its efforts to improve the condition in the trade in proprietaries, which for so long had been carried on under annoying conditions and accompanied with loss. He called upon Mr. Glyn Jones, who said that as most of them were already members it was unnecessary for him to go fully into the constitution and methods of the Association. He would urge upon them, now that they were members, to individually render to the Association all the assistance they could, and to seize every opportunity of laying before manufacturers who did not protect, the necessity for their fixing minimum retail reselling prices. He asked for volunteers for local secretaryships in the various towns represented, and said that the action taken by cutters during the last few months had convinced a large number of waverers of the possibilities before the movement, and had conduced to a large increase in their ranks. Proprietors must be asked to declare their positions, to announce whether they sided with the legitimate trader or the cutters, and said that he thought they would be right in considering those who were not for them to be against them.

The following resolution was proposed by Mr. Booth, seconded by Mr. Griffiths:—

> "That this meeting of chemists residing in North Staffordshire and District desires to express its appreciation of the work of the P.A.T.A., and to urge upon all proprietors the importance of their adding their preparations to the protected list."

Messrs. McKee, Fisher, and Hankinson spoke in favour of this resolution, which was unanimously carried. The second resolution, to the following effect,

> "That this meeting pledges itself not to distribute advertising matter, or exhibit showcards relative to articles upon which a profit is not secured,"

was moved by Mr. Jacks and seconded by Mr. Weston Poole. The speakers were unanimous in urging the unreasonableness of proprietors expecting the trade to assist in the sales of unremunerative articles. A resolution pledging the members to use every means in their power to increase the retail membership was moved by Mr. Cornwall, and seconded by Mr. Goodman.

The meeting then discussed the recent alteration in terms announced by Mr. Beecham. Ultimately Mr. Edmund Jones moved:—

> "That this meeting of chemists of North Staffordshire and District, whilst desiring to express its appreciation of the reduction in the quantity for lowest terms of Beecham's Pills, respectfully urges upon the proprietor the necessity for fixing a retail selling price, as retailers are unable to in any way support an unremunerative article."

The resolution was unanimously carried, and Mr. Glyn-Jones was asked to convey it to Mr. Beecham. In conclusion Mr. Glyn-Jones spoke as to the desirability of their forming a Chemists' Association for the district, and stated that the benefits accruing to the trade from such local organisations were very large. Such a body could act locally in connection with the P.A.T.A., and would be able to deal with all matters connected with their trade interests as pharmacists. On the motion of the Chairman, seconded by Mr. Edmund Jones, the meeting decided to form such an Association, to be called "The North Staffordshire Chemists' Association," and Mr. Edmund Jones was appointed Secretary *pro tem.* to arrange for the organisation of the local association.

SOCIAL MEETINGS.

Westminster College of Chemistry and Pharmacy, Friday, December 4.—Mr. G. S. V. Wills, Principal, in the chair.—At the annual dinner held in the Throne Room, Holborn Restaurant, there were over two hundred students and guests, both ladies and gentlemen. After a brief toast-list, twenty-four successful students were presented with prizes and certificates by Mr. H. Wootton, B.Sc. (Lond.), and at the conclusion of the programme the party adjourned to the King's Hall, where a "Cinderella" was held in honour of Miss Wills coming of age. Here the party was considerably augmented by many who had been unable to be present at the dinner, and dancing was indulged in with much spirit and enjoyment until midnight.

Plymouth, Devonport, Stonehouse and District Chemists' Association, Wednesday, December 2.—The Ball Committee held a meeting at which Mr. F. Maitland was elected Hon. Sec., and it was decided to hold the ball at the Town Hall, Stonehouse, on Friday, January 8.

Chemists' Assistants' Association, Thursday, December 3.—A Cinderella dance was held at the Portman Rooms, Baker Street, W. The room was well filled, and the dance was a great success. The band and music gave every satisfaction, and dancing commenced about 7.30 p.m., continuing (with a twenty minutes' interval) until midnight. Mr. C. W. Martin was the efficient M.C., and the manner in which this dance was supported by members of the Association seems to indicate that the Cinderellas will be a permanent fixture in the sessional programme of the Association.

Midland Chemists' Assistants' Association, Wednesday, December 2.—Mr. Harry Jessop in the chair.—A smoking concert held at the Exchange Rooms was a conspicuous success. The instrumental portion of the programme was supplied by Mr. James (piano) and Mr. Pugh (violin). Mr. F. H. Martin impressed the

audience with a recitation and songs were excellently rendered by Messrs. Jones, Wynne, Thompson (encored), E. W. Braine (encored), Hughes, T. T. Shorthouse, Ricketts (encored), Osborne, T. Turner, and Lacy. About fifty members and friends were in attendance, and Mr. H. S. Shorthouse was congratulated upon getting together a programme of such exceptional interest.

Northern College of Pharmacy, Saturday, December 5.—Mr. Geo. Clayton, Principal, in the chair.—The day students were entertained at tea at the Alexandra Hotel, Manchester, tea being followed by a smoking concert, at which an admirable selection of vocal and instrumental music was rendered. A most enjoyable evening was spent.

LEGAL INTELLIGENCE.

PROCEEDINGS UNDER THE FOOD AND DRUGS ACT.

The Sale of Arsenical Soap.

At Brentford Petty Sessions on Saturday, before Mr. G. G. Mackintosn and a full Bench of justices, Mr. Septimus Walgate, of 78, The Broadway, Ealing, Middlesex, chemist and druggist, trading as Barry, Phillips and Co., was summoned by Walter Tyler, Inspector under the Food and Drugs Act, 1875, to the Middlesex County Council, for having sold arsenical soap not of the nature and substance demanded, inasmuch as it contained no arsenic.

Mr. Ward Coleridge, barrister, appeared to defend.

The proceedings were taken under the 6th Section of the Act. "No person shall sell, to the prejudice of the purchaser, any food or drug . . . not of the nature and substance demanded." The facts, which were admitted, showed that an assistant to the Inspector purchased at defendant's shop for 6*d.* a tablet of arsenical soap, labelled "arsenical toilet soap for the complexion." A portion was sent to the analyst, who certified it contained no arsenic.

The Inspector, cross-examined at some length, said that he should expect to find essence of cucumber in cucumber soap, and some trace of honey in honey soap. He knew of no standard for the composition of arsenical soap, nor did the British Pharmacopœia define the standard of all drugs. He knew of no place where arsenical soap was defined.

Mr. Coleridge: If there was any substantial amount of arsenic in the soap it would be deleterious?—I cannot say that; I think there should be some kind of arsenic in it.

Mr. Coleridge: Is this, in your opinion, upon the same footing as sulphur soap?—Yes; that is my opinion, right or wrong. Any such words as "absolutely harmless" would be no disclosure of the absence of the arsenic.

Mr. Edward Bevan, Official Analyst to the County of Middlesex, in proving his certificate, said that, in his opinion, a person asking for such soap would expect to get arsenic in it to a substantial amount, an appreciable amount.

In cross-examination at great length, he said supposing the soap contained, say, 50 per cent. of arsenic acid (a substantial amount) it would be dangerous to leave about, or to rub on the face, as the poison would be absorbed, and it was a strong caustic. In honey and white rose soaps there were definite traces of both articles, but the quantity depended on the taste of the manufacturer entirely. There was no standard by which such compositions could be judged. It was not included in the British Pharmacopœia, but he regarded it as a medicinal preparation. He should say it was a medicine used to produce an increase in the brilliance of the complexion.

Mr. Coleridge: Would you say sulphur soap was a drug?—Yes, and this is the same as sulphur soap. Continuing, and questioned as to his method of analysis, he said that it would not be difficult to trace the arsenic in the solution, in fact it would be the other way about. He tested the fatty acids with ether, and they were soluble easily. He could carry his test out with accuracy to the extent of detecting the three-millionth part of a grain of arsenic in the substance. None of the arsenic could have gone away in the fatty acids. The makers might put arsenic in the soap in bulk, but he could find none in the sample. It might not distribute over the whole mass if put in at the rate of a grain to a cwt. It would be possible for the maker, with care, to get some into every cake of soap. It would then have to be sold as a poison.

By the Bench: He would say that one or two grains would not be detrimental; 50 per cent. would be.

For the prosecution it was argued that this soap was a drug used medicinally for the benefit of the skin and complexion. The public were aware that arsenic was a specific for the skin, and finding the soap described as arsenical and sold at a high price, they bought it in the belief it contained the drug. They specifically asked for it, and as what they obtained had no arsenic in it, they were prejudiced.

Mr. Coleridge, for the defence, argued that the soap was not a drug, and therefore outside the operation of the Act. The witnesses for the prosecution had agreed it was on all fours with sulphur soap, and that very question had been decided by Mr. Lane, a London stipendiary. The case was fully reported in the *Pharmaceutical Journal* (vol. liv., p. 331), and though the analyst proved there was no sulphur in the composition, the Court held this was not a drug to be used internally or externally. To bring the case within the Act it must be shown that it was a curative medicine. The prosecution—it was a county one also—were so satisfied with the decision that they did not appeal or go furthur, and since then the trade had regarded the case as defining where they might go and where stop. It would be dangerous to put arsenic into the soap in any quantity sufficient to be appreciable for the purpose for which it was intended, and used medicinally it had to be taken with care and in such doses as were laid down by the British Pharmacopœia. A cleanser, such as a toilet soap, could be called by any name, and arsenic to an unsubstantial amount could be put into it. If a substantial amount were put in, then a poison would be created; so long, however, as the quantity was unsubstantial, no law was evaded or broken. That was his submission, for in fact the makers of this soap did put a little arsenic into the compound in bulk.

Mr. Montgomery (one of the Bench): No. There was none in the sample, and we are limited to that.

Mr. Coleridge said his evidence would prove the fact. There was a point beyond which the analyst could not go, and though a homœopathic quantity was put into the boil of the soap, the analyst had been unable to trace it. He did not at all contend that it had any medicinal effect, and it was not used as a drug. If it were a drug, sellers of honey and cucumber soap might be prosecuted.

Mr. Montgomery: They might be to-morrow.

Mr. H. N. Bolton, St. James' Walk, Clerkenwell, of the firm of T. F. Bristow and Co., makers of the soap in dispute, said that he put nearly 1 grain of arsenic to 1 cwt. of soap; the exact proportions were 2½ grains to 3 cwt.* This small quantity was put in because of the name, but the soap was never sold as a medicinal preparation.

Replying to the Chairman of the Bench, he said it was not useful for the complexion. They called it arsenical soap because others in the trade made it, and they were asked for it.

Cross-examined: It was not called arsenical soap in order to enhance it in the eyes of the public. He knew nothing about the retailer charging 6*d.* for it. He had a right, he thought, to call it arsenical soap, even if there was no arsenic in it. Honey soap contained no honey, nor cucumber soap any cucumber, nor Maypole soap any maypole.

The Chairman said the Bench agreed to convict. They agreed that the article came within the definition of a drug and was used externally. On the showing of the defendant the soap did not contain arsenic. It was common knowledge that arsenic was good for the complexion, and not only that, but the price of sixpence for a piece of soap worth, perhaps, a halfpenny, created an impression in the mind of the purchasers that they were getting a specially medicated compound. Whether it was harmless or not did not matter. There would be a conviction, and the defendant would be found £5 and costs.

Mr. Coleridge asked for a case upon the point of law that this was not a drug, and the Bench assented.

Immediately following this case, Mr. E. F. Strickland, trading as Bruce's Drug Stores, 28, the Broadway, Ealing, was summoned for a similar offence.

Mr. P. A. Germaine, barrister, appeared to defend. The facts were identical with those in the foregoing case, except that the wrapper on the soap bore the words "Dr. King's Arsenical Soap."

Mr. Bevan, in cross-examination, said that he had found arsenic in some makes of the soap, Mackenzie's, for instance. He was not

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* This corresponds roughly to one part in a million. In reference to this matter, Messrs. T. F. Bristow and Co. request us to state that, in deference to the wishes of their customers, they reduced the proportion of arsenic in the soap to this infinitesimal amount.—[Ed. *Ph. Journ.*]

a medical man, so he could not say how arsenic should be taken to do good. The public generally knew it was good for the complexion. He analysed by Marsh's test and the sulphate of hydrogen test; he did not recognise Reinsch's test as the only one for arsenic.

In this case Mr. Germaine took objection to the form of the certificate. It must state the component parts of the sample submitted. That was laid down in Fortune *v.* Howard, but here the certificate read, "I am of opinion it contains no arsenic."

The Chairman: But Bridge *v.* Howard is a later case, and that upsets the former.

Mr. Germaine argued that that was a case relating to food, not drugs, and was governed by Section 9 of the Act. Further, he submitted that Section 6 of the Act—the one under which the case was brought to the Court—did not apply. That dealt, in addition, to food or drugs, and here there had been no such addition. Section 9 related to abstraction of anything from a food or a commodity, but here there was no abstraction, for arsenic was never in the soap. And had it been, Section 9 did not apply to drugs at all, nor to soap, which was neither food nor commodity. The certificate was not in the form set out in the Schedule to the Act, and, further, the proceedings should have been brought under the Merchandise Marks Act, which was expressly passed to deal with any exceptions to Section 6 of the Food and Drugs Act. He also argued that his client was protected by a warranty, and that "arsenical" soap must not be taken as containing the substance of the noun "arsenic." In fact, there was one word "arsenious" which alone related to arsenic, and there was nothing misleading in the title of the compound. It was merely a fancy name.

The Chairman: You say arsenic or arsenious is different from arsenical?

Mr. Germaine: I do.

The defendant, sworn, stated that he received the soap from Messrs. Yardly under a contract, and he sold it as he received it.

The contract having been handed in, the Bench held it as only an invoice, and not a warranty. To be effective the warranty must be specifically worded.

The Bench held the case was on all fours with the former, and imposed a similar penalty. They also agreed to state a case on the points of law raised.

OBITUARY.

AUSTERBERRY.—On October 17, Michael Thomas Austerberry, Chemist and Druggist, of Hanley. Aged 62.

BORTHWICK.—On December 4, Alexander John Borthwick, Chemist and Druggist, of Selkirk, N.B. Aged 51. Mr. Borthwick had been in business in Selkirk about twenty-two years, and was one of its most prominent citizens. He was a Town Councillor for six years, and in 1895 became Junior Bailie, from which office he retired in November last.

PHILLIPS.—On December 6, Thomas Phillips, Chemist and Druggist, of Portsea, Hants. Mr. Phillips had been in failing health for some time past, and while sitting by the fire after dinner, expired suddenly. It is supposed that heart trouble was the cause of death.

STONHAM.—On December 6, William Burne Stonham, Pharmaceutical Chemist, of Maidstone. Aged 39. Mr. Stonham had been a local secretary of the Society for several years and was in partnership with his father, Mr. T. G. Stonham.

LEIGH.—On December 8, Marshall Leigh, Pharmaceutical Chemist, Brighton. Mr. Leigh was formerly well known as a member of the Pharmaceutical Council, and as an active participant in local pharmaceutical affairs. For some years past, however, he has been in ill-health, and unable to attend to business matters.

PUBLICATIONS RECEIVED.

THE PRACTICE OF MEDICINE: A TEXT-BOOK FOR PRACTITIONERS AND STUDENTS, WITH SPECIAL REFERENCE TO DIAGNOSIS AND TREATMENT. By JAMES TYSON, M.D., Philadelphia. Illustrated. Pp. 1184. Philadelphia: P. Blakiston, Son, and Co. Manchester: John K. King and Son, 161, Brunswick Street. 1896. From the Publishers.

PHARMACOPŒIA OF THE ROYAL INFIRMARY, EDINBURGH; also Formulæ in use in the out-patient department of the Hospital for Sick Children. Second edition. Revised and enlarged by THOMAS ALEXANDER, chemist to the Royal Infirmary. Pp. 178. Edinburgh: James Thin, South Bridge. 1896. From the Publishers.

NEW IDEAS

ALUMINIUM FILTER FOR TOURISTS.

In referring to the latest useful novelty of the MAWSON FILTER COMPANY, the layer of material inserted in the filter to prevent the small particles of charcoal falling out was inadvertently described as consisting of asbestos. As a matter of fact this layer consists of specially prepared glass wool of very fine quality, no other substance being used in the filters except the filtering medium.

CAPSULES DE BLAUD.

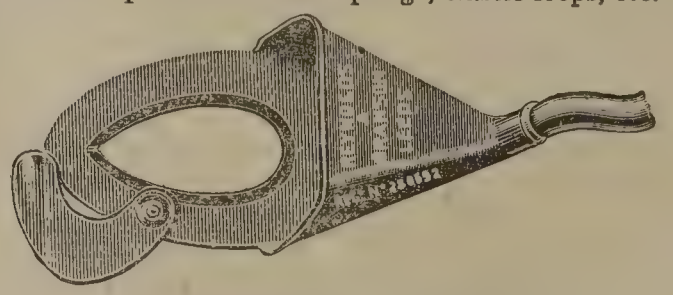
The increasing use of gelatin capsules for enclosing medicaments liable to alter by exposure to air, has naturally led to additions to the ranks of manufacturers. Samples submitted by Messrs. JOHN MOSS AND CO. seem well finished, though they bear a ridge running lengthways, which somewhat detracts from their appearance when compared with other makes. But the condition of the contents is the chief thing, and it is claimed that in this case the contents remain without decomposition even when squeezed out and exposed to the air for some hours, though access of water or aqueous vapour at the temperature of the stomach instantly causes formation of ferrous carbonate.

MEDICINAL COCA WINES.

Medicated wines, as is doubtless well known to most of our readers, can only be sold by the holders of wine licences, unless they are rendered so medicinal as to be incapable of being used as beverages. Coca wine is a marked example of the wines in this class, and most of the specimens that have been submitted for examination of late are such as could only be sold by the holders of wine licences. To be exempt from this restriction, the excise authorities require that coca wine shall be incapable of use as a beverage. Messrs. HARKER, STAGG AND MORGAN have produced a coca wine on these lines which is distinctly medicinal in nature, and cannot be regarded as a beverage. The small dose that can be taken without disadvantage renders it a cheap preparation, and as a medicinal rather than a dietetic wine it is probably as good as any of its class. In addition to the above preparation, which is best taken after dilution with port or sherry, the firm supplies a more palatable preparation, weaker in alkaloid, which can only be sold by holders of wine licences. This is fully possessed of all the properties of the finest coca leaves, and is very agreeable to the palate.

NEW PATTERN EAR CHANNEL.

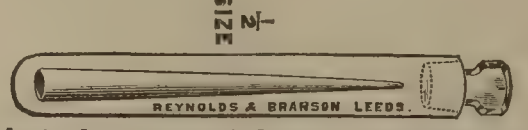
The ear channel manufactured by Messrs. REYNOLDS AND BRANSON has been greatly improved by modifications, which enable the patient to dispense with head springs, elastic loops, etc. It fits



close to the head, and by means of the "trigger" shown in the illustration is applicable to ears of all sizes, from those of King Midas down to those of quite small children. The basin is sufficiently large to prevent the liquid splashing, and, like the firm's other specialties, the apparatus is made in England.

AN ASEPTIC MEMBRANE PERFORATOR.

Another "long-felt want" is met by Messrs. REYNOLDS AND BRANSON by the introduction of Robson's Aseptic Membrane Perforator, for replacing finger-nails and hair-pins in rupturing the membranes during accouchement. It is made of celluloid, glass or



vulcanite, as desired, and supplied in a small glass-stoppered tube without collar, which can be filled with sublimate solution (1 in 1000). The inventor of this simple aid to obstetric practice is Mr. Herbert J. Robson, L.R.C.P., M.R.C.S.

CORRESPONDENCE.

"Nascent."

Sir,—"Nascent," as applied to an elementary body, implies a condition of exalted chemical activity. Is the term applicable to a compound? One occasionally comes across the expression "nascent ferrous carbonate." If this means nothing more than "chemically intact," or "free from oxide," is the use of the word admissible?

Edinburgh, December 3, 1896. J. A. Forret.

*** Nascent ferrous carbonate is the compound at the moment of being formed, and it is then, of course, free from peroxide. [Editor, *Pharm. Journ.*]

The North British Board of Examiners.

Sir,—I thank "Natu Minimus" for bringing this very important matter concerning examiners to the notice of the readers of our Journal. Since passing the Major examination five years ago, I have been reading up my Minor and Major subjects, doing practical experiments, and giving limelight lectures to local associations on light, heat, etc., in the hope that one day I might be asked to stand as an examiner; but now I sit down and sigh, for my castle has fallen to pieces.

December 5, 1896. Too-Young (68/30).

Sir,—I observe in the Journal of the 5th inst., a grumble from "Natu Minimus" regarding the nomination of examiners by the North British Branch. It appears to me that the answer to your correspondent is contained in the abridged report of what took place at the meeting of the Scotch Executive on November 26 last. As a member of the Scotch Executive, I am anxious and willing that the list of candidates for examinerships should be increased. I am also in favour of the rule that examiners shall not be members of the Executive. All this I am satisfied will be remedied in good time, and that all is at present being done in the best interests of the Society. One other matter. It is in regard to the discussion by the Council of a motion relating to the appointment of local secretaries. The meagre membership of the Society is deplored. I imagine that those in authority and who come in contact with the young men who pass the required examinations, might do something towards "getting hold" of these at the moment they receive their diploma.

St. Andrews, December 7, 1896. Wm. R. Kermath.

"Yorkshireman Dick" also writes in reply to "Natu Minimus," but omits to enclose his name and address. Accordingly, his letter must share the fate of other anonymous communications.—[Editor, *Pharm. Journ.*]

Benevolent Fund.

Sir,—In reading the report of the last Council meeting I was much struck with the apathy of the trade on behalf of the above Fund. In this town we have five chemists, but only two subscribers (although I make a call on each every year), some two years ago I wrote to the chemists in the different towns in this neighbourhood which I thought would come in my district, and out of seven applications one responded with 2*s.* 6*d.* (not since renewed). So the fault does not altogether rest with the local secretary.

December 5, 1896. A Voice from Wales (69/5).

Morality or Expediency?

Sir,—The letter signed "Wm. Jno. Rawlings," in your last week's issue, contains one or two points which deserve the attention of the Society. I can bear out Mr. Rawlings' statement in respect to chemists occupying public positions frequently leaving their businesses in sole charge of apprentices or junior assistants. To give one instance which has come under my immediate notice, I may mention the case of a town councillor, whom I believe still occupies the position of local secretary of the Pharmaceutical Society. This gentleman frequently leaves his business in charge of an apprentice or junior assistant, and to show how competent these young gentlemen are I may say that on one occasion they sent to my shop for a box of Seidlitz powders as "the boss was out." This same local secretary has a branch shop in the sole charge of an unqualified assistant, and to my knowledge this sort of thing has been going on for the last dozen years. Furthermore, this gentleman recently attended a meeting of the P.A.T.A. to protest in strong language against the evil of "the stores." Now I ask the wire-pullers of the Pharmaceutical Society ought such men to continue to assist the Society in prosecuting "stores" for employing unqualified assistants? or do they believe in the old adage, "Old poachers make the best gamekeepers?"

With regard to the pitiful lamentations which one frequently hears, praying the Society "to do something" to help the poor struggling chemists, I really think chemists have only themselves to blame for allowing the stores to get the upper hand. It is no use crying over spilt milk, and the sooner chemists make up their minds to sell patent medicines at cost price the sooner will they checkmate the stores. To-day patent medicines are not worth a rap to the chemists; therefore let every chemist keep the leading kinds in stock, and sell as suggested above. Do not play fast and loose with your customers, for rest assured if you drive them to the stores for patent medicines you drive them for profitable lines also. Let every chemist tackle this question with a firm hand and the days of the "drug stores" are numbered. At the same time, I fully agree that the Pharmaceutical Society should again attempt to promote a fair and reasonable Bill in Parliament, so as to endeavour to obtain some further protection for chemists who are justly entitled to it, considering the fact that stiff examinations have to be passed. We cannot expect the Society to put a beef steak into every dog's mouth, but it ought to give him a bone to drive dull care away.

December 7, 1896. "Red Dragon" (69/27).

"An Illegible Prescription."

Sir,—I am happy to be able to give your enquiring correspondent from Cardiff the correct reading of his "illegible prescription," a facsimile of which is published in this week's *Pharmaceutical Journal*. This is what is intended:—

℞ Hydrag. Tannic. Oxydulat., Lustgarten	2·00
Ferri. Redact.	2·00
Glycerin	0·50
Ext. Gent, *q.s.*	

M. ft. Pil. No. 20. Obduc. arg. fol. 1 or 2 a day. Boyle, Esq.

The first ingredient was introduced into medical practice about seven or eight years ago by a Dr. Lustgarten, and thus his name comes to be affixed to the salt prescribed. If your correspondent has any difficulty in obtaining the same, he may procure the substance from the Grande Pharmacie Finck, 26, Rue de Mont Blanc, Geneva, Switzerland.

Geneva, December 6, 1896. William E. Pigott.

*** Mr. Munday had already been privately informed that the first ingredient was probably "Hg. tannic. oxydulat.," a preparation described among the 'Arzneimittel' published by the German Apotheker-Verein as a supplement to the German Pharmacopœia. This, however, being more a matter of faith than definite opinion, it is satisfactory to receive the above confirmation.—[Editor, *Pharm. Journ.*]

The Irish Licence Examination.

Sir,—Permit me space in your valued Journal to ventilate an anomaly existing in connection with the Irish Pharmaceutical Licence examination, also to offer a few suggestions *re* matters pharmaceutical, as they affect the Irish student of to-day. The anomaly I refer to may best be understood by taking the following concrete illustration. At the last Licence Examination a candidate was rejected who earned between 60 and 70 per cent. of marks; the minimum requirement lies somewhere between 50 and 60 per cent. In view of this fact I ask two questions (and pass on to the suggestions I propose offering): (1) Will the Registrar deny that there were not candidates passed at the examination referred to who received less marks than the student referred to above? I trow not. (2) What examination would reject a candidate receiving between 60 and 70 per cent.?

The advent of 1897 will probably see the mooted prize fund in connection with the "Irish Final" put into operation; might I suggest to the Council (*a*) the advisability of adding to the medals proposed, books—*e.g.*, Hanbury's 'Science Papers,' 'Pharmacographia,' Remington's 'Pharmacy,' Maisch's 'Materia Medica,' Bernthsen's 'Organic Chemistry,' etc. I am sure such would encourage post-graduate study in many of the embryonic devotees of pharmacy in the Emerald Isle. (*b*) Could the Irish Council not induce the English to open their "Jacob Bell Memorial Scholarships" and the "Herbarium Prize" to Irish students? (*c*) The

Council in Ireland ought to recognise attendance at good English and Scottish schools of pharmacy, as there is not adequate tuition at present in any of the Irish schools so far recognised. It is high time that stereotyped formula was discarded—"We are not recognising any more schools at present." (*d*) Materia medica and botany, as also pharmacy and dispensing, ought to be divorced and have separate examiners, as in Great Britain, for obvious reasons. The examiners' fees could be reduced to 7*s.* 6*d.*, and this would get over the difficulty caused by the two additional examiners. Some of these suggestions may seem at first sight rather revolutionary. I trust they will be taken up by the Irish Council in the same spirit in which they are given.

Belfast, December 8. VIM ET VERVE (70/24).

MANCHESTER PHARMACEUTICAL ASSOCIATION.

Sir,—In your interesting article on an old Manchester pharmacy, the Manchester Chemists' Association is erroneously stated to have been formed in 1868. I think it was first formed in 1851 or 1852. I attended lectures in connection with it during the years 1854-5-6. Amongst the first members were the late J. Woolley, J. Standring, J. R. Lynch,—Robertson, and I believe that the only survivors are R. G. Mumbray and Wm. Wilkinson. Although at times the Society was very feebly supported, it was not allowed to die out altogether, and was called into more active existence after the passing of the Pharmacy Act.

Manchester, December 8, 1896. G. WILKINSON.

AN EXPLANATION.

Sir,—In your report of the last Council's proceedings, in connection with the retirement of Professor Geddes, I am reported to have said that "the Board in Edinburgh had worked more harmoniously under him than it had ever done before." As I made no such statement, and as its publication has caused pain and annoyance to several old members of the North British Board of Examiners, I would feel obliged by your publishing this correction. What I intended to say, and what I think that I did say, was that "the Professor had by his kindly and tactful manner done much to prevent that friction which might have arisen on the Scotch Board when the new departure was made." I could not have made the statement attributed to me, as I was well aware that the Board did not work under Professor Geddes, but along with him, and also because I always understood and believed that the members of the old North British Examination Boards got on most amicably together. The new departure, however, namely, the introduction of outside examiners into the Board, might have caused some friction, but that was happily averted by the good sense of all concerned, including Professor Geddes.

Kirkcaldy, December 9, 1896. DAVID STORRAR.

*** While confirming the verbal accuracy of the report of Mr. Storrar's reference to Professor Geddes, we are glad to be able to add that his remarks were not understood as being open to the objection of "throwing a slur upon the past examiners," or of suggesting in the remotest degree that they had not always worked harmoniously. The idea conveyed by his remarks was that Professor Geddes especially had enhanced the harmony, and so "done much to relieve the friction which had arisen in the Scotch Board when the new departure was made." There was nothing in his remarks calculated to give offence, nor anything to justify feelings of "pain and annoyance."—[EDITOR, *Pharm. Journ.*]

LOCAL SECRETARIES.

Sir,—Local secretaries will have read with interest the motion brought by Mr. Cross before the late Council meeting, and the discussion which followed relating to the efficiency of the present system. I am another of Mr. Cross's "sinners," in so far that I followed my father as a member of the Society and local secretary for Ashton-under-Lyne, but whilst recognising the desirability of stirring us up, I have wondered if the Society could not, perhaps, assist a little more also.

Once a year we receive a copy of the Register and a list of chemists to call upon. My last year's list consisted, I think, of four names only. To find out the remainder, and also if any changes had taken place, it was necessary to study that Register, which held, perhaps fourteen thousand (14,000) names, a task employing my evenings during the major part of a week. In the end I became provided with the addresses of twenty-six (26) chemists, all in this neighbourhood. To visit and see these gentlemen occupied a large part of several days. However, two joined the Society, and others promised to consider, etc.

Some of this, I think, might be avoided, and the local secretary's duties more clearly marked, and I venture to suggest that if the Register must continue to be arranged alphabetically, could not a "key" be supplied to each local secretary, giving him a list of the names of every chemist on the Register in his district, upon whom he is expected to call?

When a registered man changes his address the local secretary is instructed to inform the Registrar. Could not the Registrar in return also notify the secretary into whose district the chemist is gone? Then he might be called upon.

In short, could not some attempt be made to divide all the chemists on the Register, whether members of the Society or not, into definite groups, with a local secretary to each group, and the Registrar pass their latest addresses from secretary to secretary, then if a man complains that he is overlooked we should at least know who is responsible. Mine is a small district, and I know personally most of the chemists living here, and it is always a pleasure to meet them, but I wonder how any local secretary can keep in touch with all his friends in the larger towns, or how anyone can know, under the present system, where his district begins or ends.

I hesitate to make these comments, to carry out which would, I feel, present difficulties, but my excuse is the desire to see a greater cordiality amongst us as a body; and perhaps some more experienced member will now assist with his opinions.

Ashton-under-Lyne, December 8. JOHN W. BOSTOCK.

LIN. POT. IODIDI C. SAPONE (UNNA).

Sir,—Would you kindly inform me through your Journal of "Unna's formula" for making lin. pot. iodidi *c.* sapone?

Liverpool, December 4, 1896. F. J. ELLIS.

*** We fail to trace any formula by Unna for this preparation. Perhaps some Continental reader can oblige.—[EDITOR, *Pharm. Journ.*]

ANSWERS TO QUERIES.

PLANT IDENTIFIED.—Your specimen is *Lychnis githago*. [*Reply to* G. T.—67/4.]

CHEAP CLEAR FURNITURE VARNISH.—Clear pale resin, 3 lbs.; gum sandarach, 8 ounces; turpentine, 1 gallon. Dissolve. A shellac varnish is better for furniture but more expensive. [*Reply to* F. W. J.—68/1.]

BELLADONNA PLASTER.—In order to conform strictly with the requirements of the Act, it should be labelled in accordance with Part 2 of the Schedule of poisons. [*Reply to* ATROPIA.—69/26.]

OPIUM ALKALOIDS.—Papaverine has but little action when given in doses of 3 grains and upwards. Thebaine is much more dangerous, resembling strychnine in its action, but from ½ to 1½ grain has been taken without serious effect. These alkaloids can be obtained through the usual channels of supply, but we question the wisdom of experimenting with them as you seem disposed to do. [*Reply to* G. W. B.—70/23.]

[A number of Replies are held over.]

NEWSPAPERS sent to the Editor should have the paragraphs marked to which it is desired to call attention. Copies have been received during the week of the following:—*Henley and South Oxfordshire Standard, The Barrow News, The Scotsman, The Evening Reporter, Liverpool Daily Post, Daily Mail, Southern Daily Mail.*

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Alexander, Andrews, Atkins, Austin, Baily, Barnes, Bate, Bayley, Bell, Bindloss, Birch, Blythe, Brewis, Caldecott, Chater, Clague, Clarke, Clayton, Cocker, Cocks, Cook, Cortis, Cracknell, Davy, Dawson, Dow, Druce, Elliott, Ellis, Forret, Gilling, Goss, Grace, Gradidge, Green, Gulliver, Gunn, Hall, Hardwick, Harris, Harvie, Heanley, Henry, Hewlett, Hicks, Hill, Hodsoll, Hogg, Holding, Horsley, Hyslop, Ingall, Jackson, Kemsey-Bourne, Kermath, Kershaw, Lasham, Lescher, Line, Maben, Mair, Matthews, Meredith, Morse, Moss, Nicholls, Oram, Parker, Piggott, Pollard, Pratt, Prince, Prior, Ransom, Reynolds, Robins, Robinson, Rudd, Russell, Scott, Seely, Selleck, Senior, Severs, Sheppard, Shuttleworth, Simpson, Smith, Stonham, Tanner, Thompson, Tocher, Umney, Waddington, Walker, Walbridge, Wallis, Ward, Warren, Waters, Wavell, Whysall, Wigginton, Wilkinson, Windeatt, Winter, Wood, Worfolk, Wright, Wynne, Yates, Young.

ZANZIBAR COPAL.*

BY A. STEPHAN, BERN.

Copal is a collective name for a number of resins that exhibit great differences in their chemical and physical properties. They may, according to the author, be arranged in the following groups :—

(*a*) East African, probably derived from *Trachylobium mossambicense* and *Hymenea verrucosa*.

(*b*) West African, said to be obtained from *Guibourtia copallifera*, or from species of *Copaifera*.

(*c*) Kauri copal from New Zealand, the botanical origin of which is *Dammara australis*.

(*d*) Manilla copal obtained from *Vateria indica*.

(*e*) South American copal derived from *Hymenea coubaril*, *H. stilbocarpa*, *Trachylobium martianum*, and *T. hornemannianum*.

The first three are fossil resins, and are dug up out of the earth, whilst the last two are collected from the plants yielding them.

To the East African copals belong the following three varieties :—

1. Copal from Mozambique.
2. Copal from Madagascar.
3. Copal from Zanzibar.

The purity and hardness of the last variety render it the most valuable, and the principal object of the author's work was to investigate the constituents of Zanzibar copal ; the details that follow relate, therefore, to that variety only. This must be emphasised because many statements are met with without any mention of the variety of copal to which they refer.

From Bagamoyo, in East Africa, the author received raw (unwashed) copal, pure copal, and specimens of the tree yielding it. The resin is brought down by the natives to Kiboa from districts removed from the coast; the botanical specimens came from Usegna, which lies inland westward from Bagamoyo. The commercial resin, obtained from a German firm, agreed in its characters with the genuine specimens sent from East Africa.

Zanzibar copal, finely powdered, melts at about 140° C.; it is slowly but completely soluble in alcohol; benzol, chloroform, and glacial acetic acid dissolve about 30 per cent., ether about 34 per cent., petroleum spirit and carbon bisulphide about 10 per cent.

When boiled with alcohol the resin caked, and only a slight proportion dissolved, but by repeated digestion with alcohol it could be brought entirely into solution and precipitated with water. The resin thus purified was more soluble in the menstrua previously mentioned, and dissolved also in boiling very dilute solution of potash (0·1 per cent.). All attempts to separate it into other constituents were unsuccessful, nor could it be saponified. It appeared to consist of resin-acids, the principal of which, constituting about 80 per cent. of the resin, was called trachylolic acid. This acid could be obtained with difficulty in minute sphæro-crystalline masses melting at 168° C. From it the potassium, copper, and iron salts were prepared. A second acid, present to the extent of about 4 per cent. only, was also obtained; to this the name isotrachylolic acid was assigned. These two acids, together with about 6 per cent. of α-copal resin and β-copal resin, a bitter principle and volatile oil form the constituents of Zanzibar copal as far as the author could succeed in separating them.

An examination of the stems sent from Usegna showed that although the primary cortex contains schizogenous secretion-ducts, these are soon thrown off as the secondary cortex is produced, and in the bark of older twigs and of the stem no ducts could be found. The resin appears, therefore, to the author to be a pathological product.

* Abstract prepared from an Inaugural Dissertation.

THE EFFLORESCENT NATURE OF CRYSTALLISED QUININE SULPHATE.

BY A. J. COWNLEY.

It would appear from the discussion that is reported to have taken place on Mr. David Howard's "Note on the Estimation of Quinin," read before the Society on the 8th inst., that there may be still some uncertainty amongst many chemists respecting the efflorescent nature of crystallised quinine sulphate.

It is twenty years since, in a paper published in the Journal (*Ph. J.*, [3], vii., 189), I first drew attention to the peculiar efflorescent character of this salt of quinine, and it may perhaps be useful, in view of the uncertainty that still seems to prevail, to recapitulate shortly the facts then established.

1. Crystalline quinine sulphate—containing $7\frac{1}{2}$ molecules of water of crystallisation, or 15·32 per cent.—when freely exposed to air at the ordinary temperature rapidly effloresces until it attains the composition of a sulphate containing 2 molecules of water, or 4·6 per cent.

2. Freshly-crystallised quinine sulphate approximates, as stated by Jobst and Hesse, to $7\frac{1}{2}$ molecules of water of crystallisation, or 15·32 per cent.

3. Crystalline quinine sulphate is rendered anhydrous at 100° C.

4. When the anhydrous salt is freely exposed to air at the ordinary temperature it rapidly absorbs water until it has the composition of a sulphate with 2 molecules of water, but when access of air is retarded, the water of crystallisation in the salt is of a varying quantity, and bears no constant relation to the salt until molecules of water have been absorbed.

It was because of the results of these experiments that I have always advocated that the official quinine sulphate should be a salt of constant composition as regards its water of crystallisation ; in fact, it should be the air-dried sulphate, having, as I then showed, the following composition :—

	Molecular weight.	Per cent.
$(C_{20}H_{24}N_2O_2)_2$	648	82·87
H_2SO_4	98	12·53
$2H_2O$	36	4·60
	782	100·00

It is therefore a question well worth the consideration of the Editor of the new British Pharmacopœia, as the objection to the air-dried salt as a commercial sulphate is purely a fanciful one, namely, that it has lost the fine crystalline appearance of the fully crystallised sulphate. Among its many obvious advantages it certainly would remove from the pharmacist the onus of selling a drug that might be regarded by an over-zealous official "as not of the nature, substance, and quality of the article demanded."

The variation in the amount of water in commercial samples of quinine sulphate is shown by the results obtained when examining the purity of the commercial salt; the water of crystallisation in the forty samples examined ranged from 8·1 to 15·95 per cent. (*Ph. J.*, [3], xvi., 797).

In conclusion, I should like to add that it is to be hoped none of the empirical tests described in detail by Mr. David Howard as having been adopted in the American and Continental Pharmacopœias will be made official in this country, but that satisfactory methods may be suggested for the detection and determination of the other alkaloids in commercial quinine sulphate.

PRACTICAL RADIOGRAPHY.

I.—STRUCTURE OF THE COIL.

If we place a sheet of copper and one of zinc in acidulated water, and connect the two by means of a wire, a force or energy flows from the copper to the zinc, which is called electricity. The sheet of metal from which the electricity "flows" is called the positive element, pole, or anode, whilst that by which it leaves is called the negative element, pole, or cathode; the former is usually designated by the + sign, the negative by the − sign.

If instead of using a straight wire, a coil or helix is used, and through this a bar of soft wrought iron is placed, without being in contact with it, it will be found that the bar becomes magnetised, and the lines of magnetic force can be proved by means of iron filings to have an attraction or field as it is generally called, as represented in Fig. 1 whilst if the current is stopped the bar at once loses its magnetism Such an arrangement is called an electro-magnet. If, on the other hand, we use a hard steel core the bar retains its magnetism when the current has ceased. In constructing coils, therefore, the core is usually made up of a bundle of the best annealed charcoal wire of No. 20 or 22 gauge. ow if we increase the current we increase the magnetism, but we can with a given current attain greater magnetism by increasing the number of the turns of the helix of wire, and 20 turns of thick wire carrying a definite amount of current, say 60 ampères, will give practically the same magnetism as 200 turns of thin wire carrying only 6 ampères.

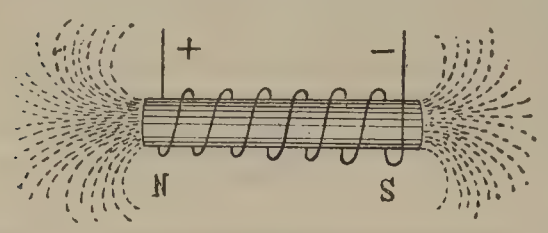


Fig. 1.

Besides the magnetic action of a wire carrying a current, there is another action—the "inductive" action—which is probably well known to readers, for doubtless many have been annoyed by a peculiar buzzing when listening at the telephone, this buzzing being due to induction from other telephone wires, perhaps three or four feet distant.

If we take a hollow wooden reel and wind round it several layers of a fine covered copper wire, separating the layers by paraffin and paraffined paper, and if the ends of the copper wire are led to a galvanometer, as shown in Fig. 2, we shall find, on plunging a bar magnet into the interior of the coil A, that the needle of the galvanometer will swing to one side and finally come to rest, whilst on withdrawing the magnet the needle will swing to the other side. It is thus proved that a current of electricity is momentarily generated, both on insertion and withdrawal of the magnet, and that the current is in opposite directions, but that when the magnet is left in the coil there is no current. This being the case, then, it is obvious that if we place inside the coil A an electro-magnet such as described in Fig. 1, we shall obtain an induced current in the coil; and further, if instead of inserting and withdrawing the magnet, we magnetise and demagnetise the electro-magnet very rapidly, we shall have a pulsating or alternating current induced in the coil, as in the case of what is known as the induction or Ruhmkorff coil. The electro-magnet or coil of wire round the soft core is called the primary, whilst the coil of fine wire is called the secondary.

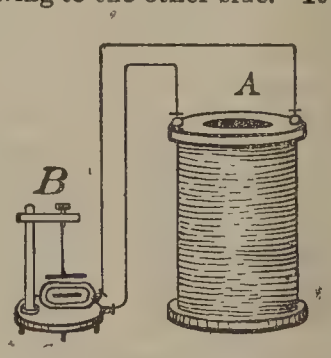


Fig. 2.

In order to rapidly magnetise and demagnetise the electro-magnet it is connected with a battery, one wire of which is connected with the automatic make-and-break, or contact breaker, the other forming the primary coil round the soft iron core.

The connections of an induction coil are shown in Fig. 3. PP are the primary wires connected with the contact breaker and winding

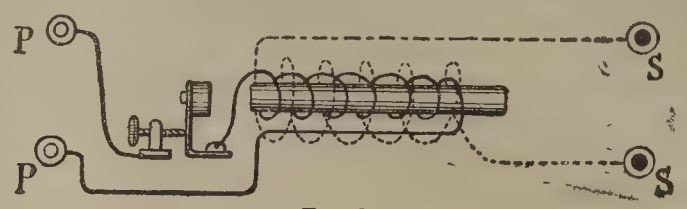


Fig. 3.

round the soft iron core, whilst outside that the secondary coil is shown by the dotted lines terminating in the discharging points SS.

The action of the contact breaker can best be explained by reference to the next illustration (Fig. 4), which shows a very common form that is used for most coils: A is one of the terminals to which the wire from the battery is attached, which is connected by a wire to B, the contact pillar and screw, the point of the screw being platinum tipped; C is an upright spring fastened to the base by the screw F, to which the other end of the primary of the body of the coil E is attached. This spring also carries a soft iron head. D is the end of the bundle of soft iron wire core. When the current from a battery passes through the primary, the core D is magnetised and attracts the soft iron head of the spring C, which bends and breaks contact with the platinum point of the screw B. Now both the spring and the contact screw are included in the circuit, and the attraction of the soft core breaks the circuit; a powerful or high potential current is induced in the secondary coil, and the hammer flies back to the contact screw, these operations being rapidly repeated as long as any battery power remains.

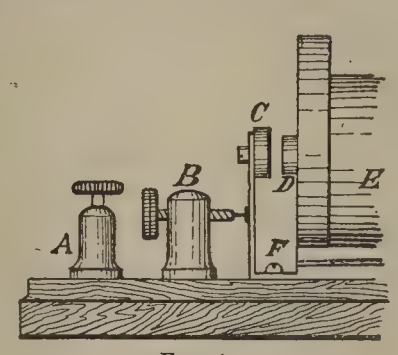


Fig. 4.

There is one other portion of the coil which must not be passed over, and that is the condenser which is inserted in the wooden base. This condenser was the discovery of the late M. Fiseau, and consists of layers of tinfoil separated or insulated by paraffined paper; the tinfoil sheets are connected together alternately, and one set is connected with the contact spring C (Fig. 4), the other with the contact screw B. The condenser absorbs the extra current in the primary at the break, and parts with it at make, thus destroying the current which might be induced in the primary coil, whilst the sparking at the contact breaker is reduced, and that at the secondary increased.

Having thus explained the principal parts of the coil, reference may be made to one other part which, whilst not essential, is decidedly advantageous, and that is the discharger. This takes the form of two brass pillars affixed to the base or to the top of the coil, which are connected to the ends of the secondary wire, and through these brass pillars are run two rods, one terminating in a point, the other sometimes in a point and sometimes in a flat plate. The ends of these brass rods are insulated by wood or ebonite handles, which are convenient for altering the distance of the points without the danger of touching the wires, for a shock from a well-constructed coil, even of small capacity, is not to be ignored, whereas one from a big coil may result in very serious consequences. An induction coil is always described as an *n*-inch spark coil; this means the number of inches of air across which a spark will leap from the ends of the terminals or secondary.

In making an induction coil, a task which will not be attempted except by those who have considerable time and energy to spare, there are one or two points which have to be very carefully looked to. The high tension of the current in the secondary enables it to leap over fairly great distances or to overcome small obstacles, and therefore the wire has to be most carefully insulated, coil from coil and layer from layer. It is usual to place the coil in hot paraffin wax after winding one layer, then to cover it with paraffined paper, so that the individual wires, which are in the first instance silk-covered, are embedded in solid paraffin, and the layers separated by paraffined paper, in a good coil, if the outer ebonite covering—which is more for finish than aught else—be removed, so that the coil will be found to be perfectly hard and solid with paraffin wax. This is necessary because the current will always take the path of least resistance, and if it can spark between two neighbouring wires or layers it will do so in preference to passing along the whole length of the wire and out at the ends. It does this it is obvious that the length of spark is decreased, and the heat generated by the internal sparking fuses the paraffin, so that the leak gets worse and worse. In small coils, practically under two-inch sparks, the secondary is generally wound in one section, but above this size it should be wound in two or more sections, as by this means, if there is a breakdown in the insulation, it is more easy to locate and less trouble to put right. In purchasing coils, therefore, the question should be asked as to whether it is wound in one or two sections, though this can usually be told by the two-section coil having a piece of ebonite between the two outer ends.

Mention has been made of the trouble of winding the secondary and the trouble of putting right any breakdown, and this will be better understood when it is realised that in a 2-inch spark coil there are about $2\frac{1}{2}$ miles of silk-covered wire in the secondary alone. In a famous coil made for the old Polytechnic in Regent Street, in Professor Pepper's time, which gave a spark or as it has been called a flame 29 inches long there was 150 miles of wire, whilst in the far-famed Spottiswoode coil, which gave an air spark of 42 inches, there was no less than 280 miles of wire on the secondary.

The various forms of coil now on the market differ principally in details and not in essentials, and the only warning that can be given is to avoid second-hand coils and purchase from a reliable firm.

Probably the pharmacist who takes up practical radiography, or the supply of the necessary materials, will find that at times an invalid coil will be brought to him, and he ought to be able to tell what is the trouble with it, and advise his customer accordingly. This may, of course, be got over by saying that it shall be sent to the electrical house, but a few notes on the most likely causes of trouble may not be out of place.

A very common fault is a breakdown in the condenser; this can generally be recognised by the reduced length of the secondary spark, and the increased brightness of the primary spark at the platinum contacts. The platinum contacts frequently work loose or get so corroded as not to make good contact; a file gently passed over their surfaces will remedy the latter, whereas when loose the contacts must be hammered or fused in.

Faults in the primary are sometimes due to a short circuit, which is generally evident by the contact breaker refusing to act, or only feebly, but it will frequently be found that the wire is broken where it enters or leaves the bobbin, and then a little solder will put it right, whereas if there is short circuiting, the whole of the secondary has to be unwound to get at the fault.

The secondary generally breaks down when too much battery power is used, and the terminals are separated too much in order to obtain a greater length of spark. This may generally be known by the diminution of the spark, provided the full battery power is used and the primary is known to be in good order, and it is by no means uncommon to actually hear the sparks passing inside the coil if the terminals are well separated beyond the sparking distance.

Battery faults are, of course, very soon detected, and it is not necessary, therefore, to do more than recommend this being first seen to when a breakdown occurs, so as to ensure that the fault does not lie here rather than in the coil.

COMPRESSED GASES.*

BY THOMAS MABEN,

Pharmaceutical Chemist.

Hydrogen.—Compared with oxygen, hydrogen is of little interest, but a passing notice of it is necessary. The demand for compressed hydrogen is mainly, if not entirely, for the limelight, but few operators think it worth while to go to the extra expense when coal gas suits their purpose almost as well. Hydrogen is prepared on the commercial scale, just as it is produced in the laboratory, with steel filings and sulphuric acid. It is obtained in a practically pure condition and conducted direct to the gas-holder, from which it is pumped by the compressors. The principal objection to the use of pure hydrogen for the limelight is its expense, which is, to a certain extent, dependent on the fact that practically double the volume is required as compared with coal gas. The proportion of each gas which would in theory be required for complete combustion may be thus expressed:—

Oxy-hydrogen ..... $2H+O = H_2O$
Oxy-coal gas ..... (say) $(2H+CH_4)+5O = CO_2+3H_2O$

In actual practice it is found that more hydrogen and coal gas are required than theory demands, but this is no doubt due to these gases being used alone to heat up the lantern and to keep the limes warm. According to Kenneth Murray, the approximate quantity of each gas used in single jets is as follows:—

	O.	H.	Coal gas.
Blow-through jet.....	4	$8\frac{1}{2}$	$4\frac{1}{2}$ cub. ft. per hour.
Mixed jet	$4\frac{1}{2}$	$9\frac{1}{2}$	5 „ „

The mixed jet requires more gas, but it has the advantage of concentrating the heat on the lime, and in practice it is found that the lantern is kept cooler than with the blow-through jet, while the light is much superior.

Coal Gas is compressed in large quantities, the gas-holder being filled direct from the gas main supply. It is found that by compression coal gas loses a considerable proportion of its intrinsic luminosity, this being due to the condensation of some of the less volatile hydrocarbons. This is, however, no disadvantage for heating purposes, as a gas of poor illuminating power is likely to possess greater heating power, this certainly being the case where loss of hydrocarbons means increase of percentage of hydrogen.

Carbonic Dioxide.—Next to oxygen, the most important gas made by the compressing companies is without doubt carbonic dioxide. It is only within a very few years that this gas has been sent out in the condensed form, but already the trade in it has developed to an extraordinary extent. In 1895 the Glasgow works alone sent out about 100,000 lbs. There is nothing mysterious about the preparation of the gas. The ingredients used are the familiar sodium bicarbonate, sulphuric acid, and water. These are mixed in the proper proportions and the evolving CO_2 is first of all passed into a scrubber charged with coke, through which a stream of water constantly

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* Read at an Evening Meeting of the Pharmaceutical Society at Edinburgh, November 27, 1896 (*Concluded from page 483.*)

trickles. Moist CO_2 is quite suitable for aërated waters, but for refrigerating purposes it must be perfectly dry. It is therefore passed, after being washed, to a drying tower charged with calcium chloride, and from there to the gas-holder.

After being compressed the gas is tested with sodic hydrate, and the usual percentage reached is 99½ of pure CO_2. The gas liquefies in the pumps at about 90 atmospheres, the temperature being abont 39° C. The force of expansion of liquid carbonic acid has not been determined as yet, but it is at least much too high to permit of any cylinder being filled completely with it. In order to prevent over-pressure it is the custom to fill the cylinders by weight. The cylinders are hung on a spring balance and the moment the desired weight is indicated the full cylinder is removed, the quantity of gas again being checked by a subsequent independent weighing. This is an effective check and the Government Committee regard it as satisfactory.

Compressed CO_2 is now largely used for refrigerating purposes for the preservation of meat on board ships in tropical climates, and for the production of ice for skating rinks in this country and elsewhere. These have, however, small interest for pharmacists, and to them the use of compressed CO_2 in the manufacture of aërated waters is its most important function. It is quite true that only a very small proportion of makers as yet use the compressed gas, but when its advantages become more widely known it is a certainty that every year will see enormous strides made by it in popular favour. These advantages are purity, safety, and convenience. I have shown you that compressed CO_2 is, or ought to be, exceedingly pure, both as regards freedom from air and from deleterious gases. The presence of air in CO_2 has a great effect in preventing the absorption or solution of the gas by water, and in such a case it is impossible to produce a satisfactory beverage. Still more injurious is the presence of any gas such as nitrous acid, which utterly destroys both flavourings and colourings. This acid is often present in CO_2 made from ordinary vitriol, and the result is disaster to what otherwise might have been the finest waters. The convenience of the compressed acid is also very great, for it does away with all risk from the handling of carboys of vitriol, and all the mess that is caused by the waste products arising from the use of whiting or soda. In spite of these advantages, however, the question of cost will probably remain the dominating factor of the situation, for in these times of keen competition the saving of half a crown a week is a consideration. It is a simple matter to calculate the cost of CO_2, and it will be found that there is extremely little to choose between the price of the gas as supplied by the compressing companies and the gas as made by the bottler. Compressed gas is usually supplied at 2¾*d.* per lb., which, with discount deducted, is almost exactly £25 per ton. The carriage of the cylinders is extra, but this will vary according to the situation of the aërated water factory and the distance from the compressed gasworks. The same question of carriage applies to the soda and the acid, but in their case it will probably be not more than half that of the cylinders. In my own case the difference between the cost of carriage of the two would represent something like £3 per ton of CO_2, thus making the CO_2 cost £28 per ton as against the prime cost of soda and acid, these being selected for comparison rather than whiting and acid, the latter being more expensive, more troublesome, and more likely to yield impure gas.

In order to get one ton of CO_2, theory requires slightly under 2 tons of bicarbonate and about 1¼ ton of sulphuric acid of 1·840 strength. But in practical working, and with unskilled labour in particular, the theoretical yield never is obtained, and therefore some allowance must be made. Assuming as a fair market value, where wholesale quantities are not being purchased, 6*s.* 6*d.* for bicarbonate and 6*s.* for acid, we find that the materials for one ton of CO_2 cost not less than £20. Allowing 10 per cent. for loss in working, the cost comes to £22, not counting anything for labour, or £6 per ton less than the compressed CO_2. It is true that the waste liquor yields on crystallisation an appreciable quantity of sulphate of soda, but the price of this chemical is now so low that the expense of attending to it would in most cases be as much as the amount realised from its sale.

According to one authority, one pound of CO_2 will carbonate nine dozen 10-oz. bottles at a pressure of 100 lbs. But no mention is made of temperature, and this is all-important, for at a temperature of 32° F. water dissolves nearly double the volume of CO_2 that it does at 60° F. I find, from data carefully taken in the actual process of bottling, that one pound of gas will carbonate 7½ dozen large bottles at 100″ pressure with the water at 40° F., and 6 dozen at a pressure of 130″, and at the same temperature. In summer, when the water is rarely under 55°, unless where refrigerating apparatus is employed, the volume of CO_2 taken up is nearly 33 per cent. less and it follows that the quantity carbonated is proportionately greater Taking one season with another, therefore, and remembering that the summer trade is three-fourths of the year's turnover, and taking one class of waters with another, namely, alkaline and sweet waters I estimate a fair average to be that one pound of CO_2 will carbonate eight dozen large bottles. With the ton of CO_2, therefore, we are able to carbonate 17,920 dozen large bottles, and taking these at 1*s.* per dozen, we find that on a turnover of £896 the advantage, as regards the prime cost, is £6 in favour of the gas made from soda and acid. But in neither case have we taken account of labour. In the case of the gas made on the spot, there is the labour of handling the soda, and the vitriol carboys, with the risk attending these, weighing out and measuring the proper quantities, the constant attention required on the generator, and the disposal of the waste liquor, and it is impossible to conceive that the figure I have mentioned, viz., £6, will cover all the extra trouble involved in the production of £896 worth of waters. On the other hand, there is no labour at all, no trouble, no attention required, and no risk, and for makers who work on a limited scale especially, the use of the compressed gas is, therefore, a very great advance on the old system.

Acetylene.—I now come to the final stage of my paper, and have to draw your attention briefly to the production of acetylene and its use for illuminating purposes. Acetylene is a gas composed of carbon and hydrogen, the formula being C_2H_2. It was first discovered by Davy in 1836, but it was not till Berthelot investigated its properties many years later that chemists came to know its interesting character. We pharmacists are familiar with it from our earliest introduction to the craft, for we are all painfully cognisant of its disagreeable odour whenever the Bunsen burner flame jumps back and burns in the tube. The flame not being able to travel up the tube, the carbon and hydrogen are not completely burned, and the result is the formation of acetylene. The production of acetylene on a large scale for many years was impossible, for the processes were both tedious and costly. Within recent years, however, a cheap and simple method has been discovered, so that now the use of acetylene as an illuminant is within the range of commercial possibility. This discovery was made by Mr. T. L. Willson, of New York, in 1888, though it was not until June, 1890, that his first patents were taken out. Mr. Willson was experimenting on the reduction of refractory metallic oxides by carbon in an electrical furnace, and he discovered that when a mixture of powdered lime and coke dust is introduced into a specially-constructed furnace the mixture melts down to a mass of practically pure calcium carbide. It was purely by accident that

he got at this result, for the first quantity of carbide, not being what he expected, was thrown into the stream which worked his dynamo. Instantly there was evolved a large quantity of gas, and this naturally attracted his attention. Having made more of the substance he examined it chemically, and found he had hit upon a discovery that is, no doubt, destined to be of vast consequence to the world.

Calcium carbide is a chemical compound brought about in the electrical furnace as just described. It has the formula of CaC_2, and is a dark grey substance with a slightly metallic lustre, very hard and dense, the specific gravity being 2·62. It gives off the unmistakable and rather unpleasant odour of acetylene, and it requires to be carefully protected from the air, otherwise the outer surface becomes acted on by atmospheric moisture. It is perfectly harmless, and may be held in the naked flame without any result, but if water be dropped on it and the carbide again exposed to the flame, the acetylene evolved burns freely.

When quite fresh and pure, calcium carbide will yield 5½ cubic feet of gas per pound, but in practice 5 cubic feet per pound is regarded as a good yield. All that is required to prepare the gas is to bring the carbide into contact with water, when acetylene is instantly evolved, the reaction being as follows:—

$$CaC_2 + H_2O = C_2H_2 + CaO.$$

Acetylene is a clear colourless gas, and when pure its odour though distinctive is not altogether unpleasant. Prepared from calcic carbide the gas contains 98 per cent. of acetylene, with 2 per cent. of impurities, chiefly air with traces of sulphuretted and phosphuretted hydrogen, and it is to these that the offensive odour is largely due.

Acetylene when burnt gives a flame of intense brilliancy, and owing to its richness it can only be consumed in very small burners. It emits a light greater than that given by any other known gas, its illuminating value, when properly developed (calculated to a consumption of 5 cubic feet per hour), being, according to Professor Lewes, no less than 240 candles, this being equal to fifteen times the value of ordinary 16-candle coal gas. In order to obtain the same light as we get at present from coal gas, a very much smaller volume of acetylene requires to be consumed, so that the air of the room is but little contaminated with the products of combustion, and the excessive heating of the upper portions of the air is reduced to a minimum. Care must be taken to avoid draughts, otherwise the gas is liable to burn with a smoky flame.

Acetylene can be condensed at 32° F. under a pressure of 323 lbs., and at a temperature of 60° F. under a pressure of 570 lbs. on the square inch, so that the liquid gas can be readily stored in steel cylinders such as I have described. The process of compression is, however, a dangerous operation, for this reason, that the critical point—that is, the point at which acetylene can no longer exist in a liquid form—is the very low temperature of from 90° to 100° F. If, therefore, from any cause, such, for example, as the heating of a spindle in the process of screwing up or opening a cylinder, a heat of 100° F. were developed, the gas might at once pass from the liquid to the gaseous condition and cause an explosion. This is probably what occurred on a recent occasion, and is the foundation of the scare that has arisen regarding acetylene gas being unsafe.

It is probable, therefore, that for a time at least condensed acetylene will not be much in vogue, but experiments are being made with it for railway carriage lighting both abroad and in this country, no change being required for the fittings except for the burners. The illuminating value is very much higher than that of the best kind of oil gas at present used for the purpose.

When acetylene was first introduced an outcry was made as to its dangerous properties. It was said to be poisonous, but it is by no means so poisonous as coal gas. It was said to form dangerous and explosive compounds with copper and copper alloys, but it has been shown that unless the acetylene contains appreciable quantities of moisture and ammonia its action on copper is practically *nil*, whilst with brass no appreciable action takes place. It is also a mistake to suppose that the danger from explosion from a leakage is greater with acetylene than coal gas. If the leak be from a burner left open by mistake, the quantity of acetylene that escapes will be very much less than of coal gas, owing to the smallness of the burner employed. Coal gas has a specific gravity of 0 4, whilst acetylene weighs 0 9, so that the rate of diffusion through a crack in a pipe would be 3 of the coal gas to 2 of acetylene; consequently the latter cannot be looked upon as more dangerous to property than the former.

There is one precaution that requires to be taken in the generation of acetylene. When calcic carbide and water react on each other great heat is developed, and if the carbide be in excess the temperature will often rise to a dangerous extent, causing some of the acetylene to form hydrocarbons of a condensible character, and sometimes reaching a temperature that causes explosive decomposition of the gas, but the generators are so made as to keep the temperature within perfectly safe limits during the action.

The room for development of the use of acetylene is enormous, for it is applicable to and specially adapted for the lighting of country houses, railway stations, villages, country churches, railway and tramway carriages, and even as an auxiliary to the electric light for lighthouse and search-lights.

The light can also be used for photographic purposes, successful negatives having been obtained with twelve jets of 50 candle power each, the exposure being five or six seconds with a slow plate. Then it can be used, as we have seen this evening, as a substitute for the limelight for the "magic lantern."

With regard to the cost, it is calculated that illumination by acetylene would cost the same as 16-candle coal gas at 6*s*. per 1000 cubic feet, which is not out of the way for country houses where no coal gas can ever be available.

The manufacture of calcium carbide requires very great electrical power, and the Acetylene Illuminating Company have erected a plant at Foyers, where they have obtained the use of a considerable portion of the water power of the British Aluminium Company. Great extensions are in view, for the present carbide manufacture is quite unable to cope with the demand, which will increase enormously year by year. The Acetylene Company do not make gas-generating plant, but that is undertaken by several firms, amongst whom are Messrs. Read, Holliday and Co., Huddersfield, to whose Glasgow agent, Mr. Walker, I am under a great obligation for his having kindly agreed to be present and show the light in actual operation. I am indebted to Professor Lewes who was good enough to sketch for me the apparatus I have shown you, and whose report on acetylene I have made use of.

For information on gas manufacturing and compressing processes I am indebted to Mr. Carty, the manager of the Glasgow Oxygen Company's works, who has courteously shown me all the processes in actual operation, and who has lent me the slides and the apparatus on the table, and I have also made use of papers contributed on oxygen manufacture and compression by Dr. L. T. Thorne and Mr. Henry Brier.

Vehicle for Castor Oil.—Mix half a fluid ounce of the oil with 8 or 10 ounces of milk and heat with constant stirring. In a few minutes a perfect emulsion is obtained, which may be flavoured with a little syrup of orange flowers.—*Pediatrics*, ii., 388, after *Amer. Med. Surg. Bull.*

BOTANIC GARDENS OF THE WORLD.

V.—KEW GARDENS.

Turner, "the father of English botany," has been claimed as the founder of Kew Gardens on the rather slight ground that he had "cicer" (chick pea) in his garden at Kew (Turner's *Herbal*). It is certain that the Dean had at one time the direction of the Duke of Somerset's neighbouring garden of Syon, but even the site of his own garden at Kew is unknown.

Kew Gardens is a national possession formed by the fusion of two Royal demesnes, Richmond Gardens and the grounds of old Kew House, which were long separated by the bridle road between Richmond and Brentford Ferry. The mother of George III. was the foundress of Kew Gardens.

Richmond Gardens, "one of ye most delectable places in ye lande" (inscription on Jean Roque's map, 1734, preserved in the Kew Museum) were the pet hobby of Caroline, wife of George II. They were laid out for her by Bridgeman, not stiffly after the Dutch style, but "with an agreeable wildness and pleasing irregularity." It was in these gardens that Jeanie Deans won from the Queen the life of her sister Effie.

George III. obliterated all traces of his grandmother's occupation. "Of this famous Richmond Lodge, its magnificent gardens, the statuary, and the numerous and singular buildings with which the Queen of George II. had at such an extraordinary outlay enriched the place, the remains of the ancient monastery of Sheen, the large and embattled Gothic entrance, and the numerous houses still appertaining to the hamlet, we have now not a vestige left." The entire site was converted into park land.

Mr. Thiselton-Dyer says: "The actual topographical history of the Richmond Gardens as they now form part of the pleasure grounds is extremely difficult to trace. A path starting from the side of Kew House and running across the Palace lawn takes a further course through the Pleasure Grounds, and ends at the head of the Hollow Walk. It is known traditionally as the Princess's Walk. Another walk starting from the same point at the head of the Hollow Walk skirts the Azalea Garden. This is called the Stafford Walk. The local tradition is that these three walks—the Princess's, Stafford, and Hollow Walks—were made in the reign of George III. by the Staffordshire militia when quartered at Kew, and at the expense of the Dowager Princess of Wales. The Hollow Walk, which is one of the prettiest features in the grounds, is shown on a 'Plan of the Royal Manor of Richmond, made by Thomas Richardson for Peter Burrell, Esquire, His Majesty's Surveyor-General in 1771.' The Hollow Walk (and the others) must therefore have been made between 1760 and 1771. They were probably designed by Brown."

In 1802 Love Lane, the bridle path separating Kew and Richmond Gardens, was shut up, the king undertaking to keep the road from Kew Bridge to Richmond in repair as an equivalent.

Kew House, which in its origin was a private house, was after the restoration known to all horticulturists as the seat of Lord Capel, a virtuoso whose collections form the starting point in the botanical history at Kew. Evelyn in his *Diary* says that the garden of this "old winter house" had the choicest fruit of any plantation in England. Capel brought over several kinds of fruit from France, and was "the most industrious and understanding in it."

In Evelyn's *Diary* under date of March 24, 1688, we read: 'From thence we went to Kew to visit Sir Henry Capel's, whose orangery and *myrtetum* are most beautiful and perfectly well kept. He was contriving very high palisadoes of reeds to shade his oranges during the summer, and painting these reeds in oil."

The best description of Sir Henry Capel's garden is found in Volume XII. of the 'Archæologia': "Sir Henry Capel's garden at Kew has as curious greens and is as well kept as any about London, His two lentiscus trees, for which he paid forty pounds to Versprit. are said to be the best in England, not only of their kind, but of greens (evergreens). He has four white striped hollies, about four feet above their cases, kept round and regular, which cost him five pounds a tree this last year, and six laurustinuses he has, with large, round, equal heads, which are very flowery, and make a fine show. His orange trees and other choice greens stand out in summer, in two walks about fourteen feet wide, enclosed with a timber frame about seven feet high, and set with silver firs hedge-wise, which are as high as the frame, and this to secure them from wind and tempest, and sometimes from the scorching sun. His terrace-walk in the middle and grass on either side, with a hedge of rue on one side next a low wall, and a row of dwarf trees on the other shows very fine, and so do from thence his yew hedges, with trees of the same at equal distances, kept in pretty shapes with tonsure. His flowers and fruits are of the best, for the advantage of which two parallel walks about fourteen feet high, are now raised and almost furnished."

In the year 1730 Frederick, Prince of Wales, who had obtained a long lease of Kew House from the Capel family, made considerable alterations there. The pleasure grounds were laid out and additional plantations made under the direction of Kett. There the Dowager Princess of Wales spent her widowhood, and there at her instance William Aiton, Philip Miller's pupil, established a physic garden on the model of that at Chelsea. Born at Hamilton, in Lanarkshire, in 1731, in 1759 he was engaged by her to superintend her gardens at Kew. In 1783 he published his 'Hortus Kewensis, or Catalogue of the Plants Cultivated in the Royal Botanic Gardens at Kew,' in compiling which he had the assistance of the Earl of Bute, Sir Joseph Banks, Dr. Solander, and Dryander, who was Bank's librarian. Not only was Aiton "universally known and esteemed in his own country, but his name and fame extended to distant kingdoms and to every quarter of the globe."

The first chief gardener at Kew seems to have been John Haverfield. On his death, in 1784, Aiton succeeded to the entire management of both the Royal Gardens at Kew and Richmond.

In 1763 we find Sir William Chambers writing in his 'Plans of the Gardens' published in that year: "The Physic, or Exotic, Garden was not begun before the year 1760, so that it cannot possibly yet be in its perfection, but from the great botanical learning of him who is the principal manager (Lord Bute), and the assiduity with which all curious productions are collected from every part of the globe without any regard to expense, it may be concluded that in a few years this will be the amplest and best collection of curious plants in Europe. For the cultivation of these plants I have built several stoves, and among others a very large one. . . Its extent from east to west is one hundred and fourteen foot, the center is occupied by a bark stove, sixty feet long. . . On the outside of the back stove in front, there is a border covered with glass for bulbous roots, which by the assistance of the flues under the pavement of the stove flourish very early in the year."

Lord Bute rendered considerable services to botany besides the share he took in the botanical development of Kew Gardens. He had a fine botanical library, "very rich in books and dried specimens, as well as in volumes of plants . . . very many of the old authors, and some very scarce ones." He published in nine volumes quarto, without place or date of issue, 'Botanical Tables containing the different Familys of British Plants distinguished by a few obvious parts of fructification ranged in a synoptical method.' The plates in this very rare book were the work of Johannes Sebastian Mueller,

born at Nurnburg in 1715, and their issue fixes its date as not later than 1780, the year of his death in London. The first volume of Curtis's 'Flora Londinensis' was dedicated to Lord Bute in 1777. Under Lord Bute's direction a great number of cedars of Lebanon, Weymouth pines, and rare trees were planted in the old Arboretum at Kew, 1762. They were raised from seed at his seat at Whitton, and those that remain include some of the rarest trees in the Gardens, in particular the great Turkey oak near the Temple of the Sun.

In the middle of the eighteenth century Kew Gardens were much more formal than they are to-day, being more on the Versailles model. "Originally the ground was one continued dead flat, the soil in general barren, and without either wood or water." Sir William Chambers erected many fanciful buildings in the grounds, of which there still remain the Orangery, the Temple of the Sun, the Temple of Æolus, etc. The orange trees were removed from the orangery to Kensington Palace in 1841, and the building now forms Museum III. Nine acres were originally devoted to scientific purposes and enclosed by walls, "the ornamental building called the Temple of the Sun being then nearly the centre of the garden, which was laid out and scientifically planted in two divisions, one containing a collection of herbaceous plants arranged according to the Linnean system, then in its infancy, but with which Aiton had become well acquainted while serving under Miller. This division was called the Physic Garden. The second division was called the Arboretum, containing all the then known introduced hardy trees and shrubs scientifically arranged. Within this area were several glasshouses." Cape bulbs were cultivated on a system which has since been reverted to. The garden collection of bulbs was grown in "glazed frames, called the bulb borders, attached to the fronts of the Botany Bay, Cape, and Palm Houses, the length of the whole being 234 feet, width 5 feet. They received heat from the flue that heated the house through openings left in the brickwork, and in severe winters they were protected by shutters. In these borders the principal of Niven's, Masson's, and Bowie's collections were well maintained for many years."

In Sir John Hill's 'Hortus Kewensis, being a Catalogue of the Plants Cultivated in the Garden of H.R.H. the Dowager Princess of Wales, at Kew, 1758,' an octavo of 458 pages, we find 3400 species enumerated under their Linnæan names. Of these 488 were hardy trees and shrubs and 200 shrubby tender plants. On the death of the Princess, in 1772, Sir Joseph Banks succeeded Lord Bute as virtual Director of the Gardens, Aiton having, as has been seen, the superintendence of them. Among the plants introduced by Banks were the first *Hydrangea hortensis*, *Pæonia moutan* (from China), and *Fuchsia magellanica*. It was his custom to retain rare plants at Kew for a year after they had flowered, and then distribute them to learned societies and eminent men. In 1784 he introduced the well-known sacred bean, *Nelumbium speciosum* and *Strelitzia regina*, named after Queen Charlotte. One of his most cherished schemes was to found a herbarium and library at Kew, but the scheme was temporarily abandoned. Banks's library and herbarium passed to the British Museum and became the foundation of the botanical department.

"Though Sir Joseph Banks published very little, he greatly enriched the collections at Kew. George III. directed that botanical collectors were to be sent abroad to secure fresh and choice supplies of seeds, roots, and plants to keep up the Royal collection at Kew, but left it to Banks to determine the countries most proper to be explored for this purpose.

The practice of sending out collectors began in 1772, when Sir John Pringle, formerly President of the Royal Society, obtained permission from the King for one of the under-gardeners at Kew, Francis Masson, to reside some time at the Cape with the view of collecting there seeds and living plants for the Gardens at Kew. For this purpose Masson was allowed £300 a year. He was born at Aberdeen in 1741. During the three years of his stay at the Cape 1774-1776, he sent home four hundred species of living plants including Cape heaths and pelargoniums. A plant introduced by him in 1775, *Encephalartos longifolius*, still exists in the palm house. He made a second voyage to the Cape, sending numerous plants to Kew between 1786 and 1795, and in 1796 published a folio volume of coloured figures and descriptions of the *Stapeliæ* of South Africa *Cineraria cruenta*, the parent of our garden cinerarias, and the popular Cape bulb, *Eucomis punctata*, were introduced into England by him at Kew.

Another Kew gardener, David Nelson, was assistant botanist during Cook's third voyage, 1776-1779. L'Heritier founded the famous genus *Eucalyptus* on *E. obliqua*, first found by Nelson in Van Diemen's Land, and introduced into cultivation by Captain Furneaux in 1774.

Christopher Smith took the place of David Nelson, 1791, and brought home a large collection of living West Indian plants, 1793. He was afterwards appointed botanist to the East India Company, and prepared a large collection of plants at Calcutta for Kew. In 1797 he visited the Moluccas, where he made a large collection of plants, more especially dried specimens. He died at Penang in 1806.

James Wiles accompanied Christopher Smith on Bligh's voyage. In 1793 he was given the charge of the very fine botanical gardens formed by Hinton East at Gordon Town, nine miles from Kingston, Jamaica. He seems to have remained in charge of these gardens till 1805.

Archibald Menzies, botanist and surgeon, accompanied Vancouver in his voyage of survey between 1791 and 1795. He made a rich collection of herbarium specimens and seeds, transmitting also cones of *Banksia* and other *Proteaceæ* to Kew from that part of Holland.

The story of the introduction of the Chili pine, *Araucaria imbricata*, is rather amusing: "At a dinner given by the Viceroy of Chili to the captain and officers of the ship, part of the dessert consisted of nuts, which Menzies (who was a good botanist) had not before seen. Instead of eating all his share, he took some with him on board, and, having obtained a box of earth, planted them, when they sprouted, and he succeeded in bringing five plants to England, which were safely received at Kew." The specimen now existing there was planted out from the greenhouse in 1806 or 1808, and was a great favourite of William IV. Menzies also discovered *Sequoia sempervirens*, the redwood of California.

Anthony Pantaleon Hove, M.D., a Pole, was employed by Kew at the instance of Banks to collect plants in India, 1787-1789.

(*To be continued.*)

Toxicological Isolation of Hydrochloric Acid.—Having found all the general methods unsatisfactory, Gualtiers (*Bollet. Chim. Farm.*) adopts the following process:—The matter under examination is freely diluted with water, gently warmed, and treated with lithium carbonate to distinct alkalinity; the filtrate from this is evaporated to dryness, and the residue treated with a mixture of three parts of anhydrous ether and one part of absolute alcohol; this ethereal solution is distilled, and the residue dissolved in a small quantity of water. If hydrochloric acid is present, the characteristic reactions for lithium chloride are readily obtained. It must be borne in mind that the normal gastric juice contains hydrochloric acid, so that unless the quantity obtained by this method is excessive, no conclusion that death has been caused by poisoning with that acid should be formed.—*Annales de Chim. Analyt.*, i., 413.

THE USE OF GAS FOR DOMESTIC LIGHTING.*

BY PROFESSOR VIVIAN LEWES.

Increasing the Illuminating Value of Gas.

In the early attempts at improvement there were two recognised methods for enhancing the illuminating value of gas—the enrichment process, by which carbon particles were furnished to that part of the flame most deficient therein; and the aëration process, the object of which was to find the proper amount and temperature of the atmosphere to be admitted to the flame. The limits of both these lines of progress seem to have been reached; the enrichment method in the acetylene light, and the aëration method in the regenerative burner developed by Siemens. Inventors had thus to turn their ingenuity in other directions, and their efforts have, accordingly, been latterly concentrated on the evolution of the incandescent mantle. Perhaps the genesis of the incandescent idea was the old Drummond light, produced by the play of the oxy-hydrogen flame on lime, and emitting a very powerful illumination. The obvious drawbacks were the excessively high temperature required to produce the incandescent effect, and the unwieldy nature of the substance acted upon. In addition, one had to take into account the production of the two gases oxygen and hydrogen, and the provision of suitable arrangements for their combustion. Hence amended forms of various kinds were tried. One of the first was the substitution of magnesium rods for the lime, and then came the employment of a platinum mantle in the Lewis light—a very great advance. (A Lewis cone was shown.) The platinum cone, which is heated on the Bunsen principle by coal gas, gives an exceedingly beautiful white light of considerable power under ordinary gas pressure. The brilliancy, however, is not lasting, owing to chemical changes resulting in the formation of platinum carbide on the mantle or cone.

In 1886, Welsbach discovered that if a cotton plume or mantle were dipped in a solution of the nitrates of certain rare earths—a term which includes thoria, zirconia, yttria, ceria, alumina, and so forth—the whole fabric became, by capillary attraction, permeated with these nitrates, and that the original fibres could be burned off, the nitrates oxidised, and a delicate skeleton produced, consisting of nothing but the oxides of the above-mentioned metals—a mantle, in fact, capable of being thrown into a state of incandescence at a reasonably low temperature, and giving a high power of illumination. The drawback to the introduction of the Welsbach mantle was its extreme delicacy and its liability to suffer damage even when carefully handled, but this has been overcome by ammoniation, and it has recently been found that a coating of collodion strengthens the film and renders it fit for transport without detracting from its efficacy. The curious thing about all the mantles made on this principle is that there must be a mixture of two or more of these rare metals in certain proportions. In the Welsbach system the basis is thoria or lanthania, and ceria is added thereto in the proportion of 1 to 100. Now thoria (pure) cannot under any circumstances be coaxed to give more than one candle power per cubic foot of gas consumed, and ceria is only credited with the capabilities of ·9 candle power, yet a mixture in the above proportion yields an illumination of 12 candle power per cubic foot of gas Increase the proportion of ceria, and the luminous potency of the mixture decreases, and a half-and-half mixture is useless as a source of light. Similar results are obtained with chromium and alumina. (This was practically demonstrated by Professor Lewes with specially constructed cones of the respective metals, and was explained as being due to "molecular change.") The luminous value of mantles made with the various oxides is compared in the following table:—

Thoria (commercial)	6·0	candles per c. foot of gas burned.
Do. (pure)	1 0	,,
Zirconia (commercial)	3·1	,,
Do. (pure)	1·5	,,
Ceria	0·9	,,
Yttria	5 2	,,
Lanthania	6·0	,,
Alumina	0·4	,,
Chromium	3·3	,,
Strontia	5·5	,,
Magnesia	5·0	,,

It is plain that the light given by these incandescent mantles is much too intense for ordinary purposes—it is too concentrated—and devices have therefore to be resorted to in order to increase the illuminating surface. This is variously effected by the use of globes, which diffuse the light and deprive it of its dazzling property. As an instance, take a globe the surface of which consists of a series of vertical prisms; the light is seen to be diffused in a horizontal band reaching halfway up the globe. Now take a globe consisting of horizontal prisms and you see the light diffused in a vertical band. A combination of horizontal and vertical prisms ought therefore to give a very much better result than either, and it does. (All three experiments were shown). The combination globe goes by the name of the "holophane," and a test by the radial photometer shows that at working angles the illumination is actually increased by 12·3 per cent. by the use of such a globe. A pink globe of similar construction gives a gain of illumination of 1·1 per cent. only. The radial test further shows that when ordinary white opal globes are used a loss of 7·5 per cent. of light results, with crown glass (white) a loss of 12 4 per cent., and with pink opal globes 34·1 per cent. of the light is absorbed or rendered unavailable for illumination.

Coming to the question of the penetrative power of light, one cannot say much for the incandescent burner. Under ordinary atmospheric conditions it is *par excellence* the best for street lighting, but in a fog it is ineffectual. The reason is not far to seek. An examination of the spectrum of the Welsbach mantle reveals the fact that it approaches very nearly to the solar spectrum—it is very rich in the violet and ultra-violet rays, and it is precisely those rays which cannot struggle through a London fog. As a matter of fact, the old Argand burner has far more penetrative power in atmospheric mist and fog than the incandescent or electric light. (This was proved experimentally on producing an artificial fog in a solution of hyposulphite of soda by the addition of HCl.) This experiment explains why the sun looks red on a foggy day; the violet rays are absorbed by the solid particles floating in the aqueous vapour of the atmosphere just in the same way as the precipitate produced in the tank shown arrested the violet rays of the Welsbach light, and only the red portions of the spectrum get through. Fog deprives coal gas of 11·1 per cent. of its illuminating power, an acetylene flame loses 14·7 per cent. of its intense power, and the Welsbach light is robbed of 20·8 per cent. of its efficacy.

* Notes of lectures delivered at the Society of Arts (see *ante*, p. 490).

CHINESE OPIUM TRADE.*

(*Concluded from page* 466.)

The import of Indian opium at Amoy also displays a great diminution; in 1894, for instance, over 330,000 lbs. of Benares opium were imported, as against 390,000 in 1893, but in 1895 the import of this variety fell to 260,000 lbs. In his report for 1894, Her Majesty's Consul states that a great quantity of opium grown near Ichang finds its way to the Amoy district. The poppy, however, is also grown locally, being cultivated from seeds brought from India, and the opium produced bears some resemblance to the Bengal variety, though much inferior. This local cultivation is increasing considerably in certain districts, but the amount of opium produced is not sufficient to meet the demand for it, and the

* From report (1803) for the year 1895, on the foreign trade of China.

supply is therefore supplemented by importation of the Ssŭch'uan and Yünnan varieties, *vid* Shanghai. A large quantity of western opium is also imported clandestinely overland. The import of Bengal opium is declining fast, but that of the non-Indian variety, *i.e.*, Persian opium, though diminishing, is not decreasing so rapidly nor is the trade likely to become extinct in the near future, as it in many respects replaces the Bengal drug. The prohibition of opium in Formosa, where the Persian variety was much smoked, will increase the amount of this class of the drug imported into China.

At Swatow 3641 chests of opium, valued at 2,353,285 Haikwan taels, were imported in 1895, and 5113 chests, valued at 2,992,635 Haikwan taels, in the previous year. All varieties of foreign opium exhibit a diminished import. The supply of Chinese opium, however, is not apparently very large. The local production is limited, nor is the quantity of the native drug imported by sea considerable, though increasing. The equivalent of 1000 chests of Ssŭch'uan opium are annually brought to Chia Ying Chou, the distributing centre of the Swatow district. A new industry has lately sprung up at Swatow, by which native opium is converted into a variety closely resembling the foreign article. The native drug contains an oil which gives it a coarse, rank taste. The oil in question can be removed, but the flavour of the new product, though said to be equally good, is less satisfying to the consumer. This industry is in the hands of Singapore Chinese, who have enlisted the services of foreign experts, and who have also imported skilled Indian workmen. The adventure is likely to prove most lucrative.

Kiungchow is one of the few ports the returns of which show a certain increase in the import of Indian opium. Ten years ago, however, the value of the opium imported was far larger than at present. An immense quantity of opium is imported by junk or smuggled into Hainan. The cruisers protecting the revenue are powerless to prevent smuggling except to a limited extent.

The Commissioner of the Imperial Maritime Customs at Canton remarks that the poppy is but little cultivated in Kuangtung, the output being only about 50 piculs annually. It is unlikely that the cultivation will increase. There was a great decrease in 1895 in the import of all varieties of foreign opium, Patna exhibiting a diminution of more than 1000 piculs. Native opium is coming in in increasing quantities.

With reference to the import of foreign opium at Pakhoi, Her Majesty's Consul at that port states that it "has, at its present rate of diminution, only one more year of existence before it." The import was largest in 1888, when it was valued at £102,000; in 1894 the value was £21,000; and in 1895 only £12,000.

At Kowloon the decline in the import of foreign opium has been steady, and the amount imported is only one-fifth that given in the returns for 1888.

The Commissioner of Customs at Lappa remarks that the "high price of the Indian drug has given a great impetus to the trade in, and the consumption of, the 30 per cent. cheaper native product." The opium produced in certain districts near Lappa is said to be superior to Yünnan opium. The decline, however, in the import of foreign opium at Lappa was not so marked as elsewhere, since the import of 1894 was unusually high. That part of the import of which the Imperial Maritime Customs takes cognisance is also said to be diminished by the amount of smuggled opium brought in from Singapore.

Lungchow and Mêngtzŭ are the only places where native opium appears as an export to foreign countries. At the former port all three varieties—Yünnan, Kueichou, and Ssŭch'uan—were exported. At the latter, Ssŭch'uan opium alone appears, the amount being 603 piculs. Its value rose to 320 Haikwan taels per picul towards the end of 1895, a figure which affected the purchases made by the Opium Administration in Tonquin, who seriously considered the advisability of buying Indian opium.

The falling-off in the import of foreign opium at Chinkiang is attributed to the fact that much is brought up from Shanghai in native boats instead of by steamer. The quantity of Ssŭch'uan opium imported in 1895 was much smaller than in the preceding year, but Yünnan opium appears in the returns for the year under review, having been absent in 1894. Opium is produced in Kiangsu, and is known as Hsüchou opium, but the large stock manufactured in 1894 was much adulterated, and smokers have gone back to the foreign variety. This local opium costs about 256 taels per picul The price of foreign opium varied from 595 taels to 660 taels per picul. The Commissioner of the Imperial Maritime Customs remarks, "It is not unlikely that before long local opium will be passed through the customs, and in that case a great stimulus will be given to this trade. When once the drug circulates freely through the Empire on payment of an export duty, it will affect the sale of foreign drug at many of the ports, provided, of course, it is not adulterated too much."

In the Wuhu trade report for 1895 of the Imperial Maritime

Table showing the Net Annual Importation of Opium into the Treaty Ports during the Decade 1886–95.

Port.	1886.	1887.	1888.	1889.	1890.	1891.	1892.	1893.	1894.	1895.
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
Newchwang	38,265	28,800	15,065	12,265	28,000	34,535	17,735	21,600	9,465	—
Tientsin	276,135	242,665	207,325	203 735	200,665	197,865	216,935	214,000	194,135	170,800
Chefoo	93,465	81,065	42,400	38,135	41 200	44,265	41,465	45,200	55,065	60,535
Chungking	—	—	—	—	—	—	—	—	135	—
Ichang	135	—	265	135	—	—	—	—	—	—
Hankow	178 935	168,535	154,8 0	124,935	98,4 0	98,400	99,600	100,000	96,135	77,065
Kiukiang	532,400	402.265	413,265	423,065	443,465	482,800	461,335	455,735	429 465	384,665
Wuhu	766 800	592,935	453 335	532,400	342,265	347,735	349,335	339,065	385,735	336,535
Chinkiang	901,735	877,865	521,465	402,135	456,400	423,065	398,935	449,200	557,200	519,200
Shanghai	1,768,865	2,279,865	2,436,535	2,206,000	2,322,665	2,358,400	2,120,400	2,150,535	2,159,735	1,870,000
Ningpo	1,099,065	835,200	805,335	791,065	803,465	803,600	826,535	777,200	742,000	688,535
Wênchow	3,335	8,535	31,200	26,935	13,465	13,065	16,800	18,535	11,335	8,535
Foochow	632,935	657,735	822 135	752,400	689,600	669,600	700,800	659,600	588,000	493,600
Tamsui	217,735	216,265	263,200	264,400	362,265	290,800	280,400	277,200	237,200	96,935
Tainan	388,400	350,135	356,265	366,935	410,135	453,465	404,800	347,735	284 000	133,600
Amoy	1,035,735	848,400	916,400	784,665	771,335	729,865	672,535	608 935	423,065	323,600
Swatow	895,200	853,200	915 0 5	945,065	1,034,665	1,052,665	952,665	850,000	772,000	549,200
Canton	142,665	1,026,935	1,758,535	1,636,000	1,574,800	1,705,065	1,442,535	1,228,665	1,017,465	798,935
Kowloon	—	203,465	380,135	326,935	241,335	192,535	128 135	122,135	85,600	70,665
Lappa	—	137,465	241,465	261,600	278,665	250,800	186,135	220,535	289,535	200,000
Kiungchow	256,465	186 135	147,465	108,000	71,335	55,865	27,335	161,935	89,200	38,800
Pakhoi	17,865	103,200	146,665	133,465	131,335	121,600	93,200	54,265	39,865	19,600
Lungchow	—	—	—	—	—	—	—	—	—	—
Mêngtzŭ	—	—	—	—	—	—	—	—	—	—
Total	9,040,135	9,850,265	11,014,930	10,140,270	10,215,460	10,325,990	9,437,615	9,081,075	8,416,335	6,840,805

Customs, it is remarked that the falling-off in the import of foreign opium is "chiefly due to the larger consumption of native opium, which shows a marked improvement in quality, and is sold for half the price of the foreign drug, thereby placing it within the reach of everybody." There was a fine crop in Anhui, the produce of which province is chiefly smoked at Wuhu, but the Ssŭch'uan variety is coming into favour rapidly, the import being 100 per cent. higher than in 1894.

The Kiukiang returns for 1895 exhibit a diminution of over 300 piculs in the import of foreign opium. No details respecting native opium at that port appear, however, to be forthcoming.

At Tientsin the import of foreign opium, as elsewhere, has declined. The amount of Malwa and Patna imported amounted to only 169,867 lbs., a decrease, as compared with 1894, of considerably over 23,000 lbs. The table given shows the amount of foreign opium annually imported at the treaty ports during the decade 1886-95.

LITERARY NOTES.

'EVERYONE'S GUIDE TO PHOTOGRAPHY' is well worthy of that name, and the cheapest book on the subject yet published. Two hundred and fifty pages full of really practical information are supplied in a volume of convenient size for the pocket, bound in a neat flexible cover, for sixpence. The author—Mr. E. J. Wall, F.R.P.S.—is well known in the photographic world as possessing what is probably the widest experience in this country in his particular subject, and the association of his name with the book should suffice to sell it like wildfire. Instructions are given for making one's own appliances, and simple directions for every branch of photographic work, whilst as an instance of the extent to which the ground has been covered, there are chapters on the use of orthochromatic plates, pin-hole photography, detective cameras, colour photography, and radiography. The publisher, H. J. Drane, Salisbury Square, Fleet Street, E.C.,may expect to be overwhelmed with orders for this book.

THE BRITISH AND COLONIAL DRUGGISTS' DIARY FOR 1897 contains a good deal of useful information, but like others of its class it is more likely to bring grist to the advertiser's mill than to that of the retail chemist. The practical and readable articles included are as good as lost here, and would have appeared to much greater advantage in the pages of a journal. Though many who are not much in the habit of using and referring to diaries are doubtless content with such elaborate productions, the busy man requires something much simpler.

NEW IDEAS.

SOME NEW TABLOIDS.

"Residuum Rubrum" tabloids are prepared by Messrs. BURROUGHS, WELLCOME AND CO. from the carefully dried red residue of venous or arterial blood. Beneficial results have been reported in a series of cases of osteo-arthritis treated with these residues during the past eighteen months or more. The tabloids are given in doses of twelve five-grain tabloids during the twenty-four hours, and are supplied in bottles containing one hundred. Another new tabloid offered by the same firm contains cascara sagrada extract, 2 grains; nux vomica extract, $\frac{1}{4}$ grain; belladonna extract, $\frac{1}{3}$ grain; and powdered capsicum, $\frac{1}{2}$ grain. This combination, containing intestinal stimulant, tonic and laxative ingredients, is suggested for use in the habitual constipation of delicate persons with feeble digestive organs. Being sugar-coated and elegant in appearance, the tabloids are taken readily without objection by the most fastidious. They are issued in bottles containing 25 and 100.

PARLIAMENTARY NOTES AND NEWS.

THE HOME OFFICE REPORT on Great Britain's Mineral Industry is a marvel of statistical thoroughness. If it be true that one can make statistics prove anything, the compilation in question, which is a testimony to the indefatigability of Mr. Le Neve Foster, F.R.S., contains material for whole sessions of parliamentary talk. Naturally, most of the figures deal with the coal industry, for coal is said to be the source of our national prosperity, and it is distinctly soothing to learn that, notwithstanding an output during 1895 of 189,661,362 tons, there is absolutely no ground for the late Professor Jevon's pessimistic prophecies of a coal-less England in the near future. Iron ore with an output of 12,615,414 tons is credited with an increase, and has shown a satisfactory augmentation in value. Chalk, limestone and sandstone stand third on the list for amount quarried, and copper shows an increase, but lead ore exhibits a diminution in the quantity raised, and, perhaps by way of corollary, an increase in value. Tin, on the other hand, is in a bad way, and is lower in value and less in quantity than in the preceding year. It may come as a surprise to a good many people that 13,266 tons of gold ore was raised in 1895 in Great Britain, and that the figures are about double those recorded for 1894. The British gold mining industry is apparently a live thing, and though the amount of the gold extracted is not high (6,600 ounces, valued at £18,520), it is evidently regarded as encouraging by those interested in mining for the precious metal.

A LARGE PORTION OF THE REPORT is devoted to statistics and diagrams relating to accidents in connection with mining and quarrying during the year 1895. Without detailing the arithmetical information presented, it may be of interest to our readers to know that the occupation of a miner is by no means so unsafe as the nature of his work would lead one to suppose, and it is apparently becoming less and less hazardous, probably on account of better appliances and stricter official supervision. At any rate, it is shown that though there has been an enormous increase in the number of persons employed in the mineral industries, *i.e.*, in mines and quarries, the expected rise in the accident death rate has not only not taken place, but has been substituted by a slight diminution. If the Home Office supervision continues so efficacious, the fatalities from fire damp and poisonous vapour in mines will soon be less than the annual victims of carbolic acid.

AN OVERWORKED GOVERNMENT DEPARTMENT sounds suspiciously like one of those cynical paradoxes which abound in the "new humour," but in this instance the suspicion is unfounded, for the phrase represents an actual fact. The paternal legislation of recent years has thrown so much additional administrative work on the Local Government Board, that the staff of the Department cannot adequately cope with it. A Departmental Committee has therefore been arranged by Mr. Chaplin and the Chancellor of the Exchequer "to inquire into the sufficiency of the working staff and secretariat of the Local Government Board," and also into the "existing division of the work, the salaries of the officers, and the organisation of the Department generally." The Committee consists of Sir J. T. Hibbert, Privy Councillor; Mr. T. W. Russell, M.P., Parliamentary Secretary to the Board; Sir F. Mowatt, one of the Treasury Secretaries; and Mr. H. Primrose, Chairman of the Board of Customs, and these gentlemen are to recommend what changes should be made in existing arrangements. Perhaps a re-organised Department might find time to deal with that little grievance on the subject of the watering down of the qualification for Poor Law Dispensers, to which attention has been directed in this Journal more than once, and which the Society, through the President, is still trying to redress.

A DEPARTMENT OF PUBLIC HEALTH, with a Minister of Cabinet rank specially charged with the duty of administrating the laws passed for the promotion and preservation of the nation's health and corporeal well-being, might relieve the Local Government Board of a large amount of its medical and pharmaceutical work with advantage to the public, the Department, and the callings particularly interested. With such a Department, the formulation, amendment, or enactment by Parliament of measures necessary for the safety of the public might be rendered a little less hopeless than it at present is. But to dwell on these things is Utopian, and perhaps the average citizen finds a certain piquancy in a life beset by preventable dangers.

PHARMACEUTICAL JOURNAL.

A Weekly Record of Pharmacy and Allied Sciences.

ESTABLISHED 1841.

Circulating in the United Kingdom, France, Germany, Austria, Italy, Russia, Switzerland, Canada, the United States, South America, India, Australasia, South Africa, etc.

Editorial Office: 17, BLOOMSBURY SQUARE, W.C.

Publishing and Advertising Office: 5, SERLE STREET, W.C.

LONDON: SATURDAY, DECEMBER 19, 1896.

A CHRISTMAS APPEAL FOR THE BENEVOLENT FUND.

THE possibility that the hitherto respectable history of the Benevolent Fund may be in some degree marred by a most unfortunate circumstance affords good reason for calling special attention to the subject in this place. At the last two meetings of the Council, Mr. HARRISON, the Chairman of the Benevolent Fund Committee, made statements as to the actual position of the Fund, which showed that the money available for payment of the annuities falling due on the 1st of January next does not amount to more than about one half of the sum required for that purpose. Practically at the present time, the situation depicted by a correspondent in this week's journal is an imminent contingency. Like him we feel that it is a duty to endeavour as far as possible to avert the disaster, and we hope to be so fortunate as to secure the assistance of many throughout the country.

The deficiency in the available resources of the Benevolent Fund is partly due to the increase in the amount of the annuities and partly also to the large number of calls made upon the Fund for grants. At the commencement of the year the money in hand was £471, insufficient to pay the annuities by about £100; the receipts up to November 30 for subscriptions and income from investment amounted to £2710, making in all £3181, while the payments during the past year have amounted to £2875, leaving £306 in hand at the present time. The amount of the annuities that will fall due in January is £570, so that there will be a deficiency of more than £250.

Under these conditions we desire to urge upon chemists and druggists generally the propriety of some special effort being made to collect a sum, before the end of this month, sufficient for meeting the payments falling due in January. Taking the total number of persons on the Register at fifteen thousand, there are at least ten thousand who do not subscribe to the Benevolent Fund, and if any considerable number of them would either send the Secretary or hand to the local secretaries of their respective districts a very small sum the emergency would easily be met. Any money so contributed must of course be in the shape of subscription, in order to be available for the payment of annuities, because donations cannot be so applied. To reduce the matter more to detail, it may be suggested that if every local secretary throughout the country were thus enabled to send up to the Secretary one pound, the deficiency would be made up, and a balance would remain enough to enable the Benevolent Fund Committee to deal with any applications for grants which may come forward in January next.

In dealing thus, in the first place, with the case of non-subscribers to the Fund, it will be appropriate to call to mind the manner in which the Fund is administered. It is not confined to the relief of necessitous members or associates of the Society, but is extended to all persons who have been registered as chemists and druggists. As a charitable organisation it has, therefore, a claim to the support of all who are engaged in the business, irrespective of their relation to the Society. We take this opportunity of enforcing that view upon the consideration of the trade generally, because we feel convinced that it is often overlooked, and that the Benevolent Fund is in very many instances supposed to be applied only to the relief of those connected with the Society.

Before concluding this appeal to the generosity of members of the trade, it may also be pointed out as one of the causes of the present deficiency that, among the number of those who may be regarded as regular subscribers to the Benevolent Fund, there are nearly three hundred who have not sent any contribution this year. We trust that when they become aware of the deplorable position now existing they will help to remove it.

We commend to both subscribers and non-subscribers to the Fund a perusal of Mr. WIGGINS' letter on page 543, and confidently rely upon both for a response sufficient to remove all anxiety as to how the immediate claims on the Fund are to be satisfied.

THE TENDENCY OF TABLET MEDICATION.

COMMENTING on an article in which a medical writer expresses the opinion that the addition of a class of compressed tablets and tablet triturates to the U.S. Pharmacopœia "would regulate what is at present a somewhat irregular but widespread and popular method of medication, and one that has its real advantages and merits," the *American Journal of Pharmacy* denies that the tablet form of medication is an improvement. Experience with a few simple tablets is stated to have shown them to be thoroughly unreliable, and the results of experiments are quoted to prove this statement. Further, it is urged that, whilst the tablet may be a boon to the lazy physician, "it is a boom for the quack," as the latter, with a manufacturer's price list—which designates the diseases certain tablets are supposed to be useful for, together with the dose and mode of administration—is in a position "to quiet his conscience with the belief that he will do no harm if he is not able to do any good." The sugar-coated pill fad, it is pointed out, has been followed in the United States by the elixir craze, and this in turn by the gelatin-coated pill, the tablet, and synthetic remedies which may be administered in any of the forms mentioned. In all these methods of medication the manufacturer has done the head work, and the physician, who ultimately suffers the most, has done little more than "press the button," the net result being that the public learns a little more about how to practise self-medication.

ANNOTATIONS.

THE ROYAL INSTITUTION courses of lectures will begin again after Christmas, and an attractive series of subjects has been selected for treatment before Easter, 1897. The Christmas lectures, adapted to a juvenile auditory, are to be delivered by Prof. Silvanus P. Thompson, on a subject of especial interest at the present time—visible and invisible light. The six lectures will deal respectively with lights and shadows, the visible spectrum and the eye, polarisation of light, the ultra-violet part of the invisible spectrum, the infra-red part of the invisible spectrum, and Röntgen light. This course should attract adults even more than the juvenile auditory they are specially arranged for. In succeeding courses of lectures Professor A. D. Waller will discourse on animal electricity, Professor H. A. Miers on some secrets of crystals, Dr. J. W. Gregory on the problems of Arctic geology, Professor W. Boyd Dawkins on the relation of geology to history, and Lord Rayleigh on electricity and electrical vibrations. An excellent programme on which the Committee of Managers is to be congratulated.

THE PROPERTIES OF LIQUID OXYGEN will be described by Professor Dewar at the first Friday evening meeting, to be held on January 22. Prior to that, however, he will show experiments illustrative of the use of liquid air in scientific research, on the occasion of the opening of the Davy-Faraday Research Laboratory by the Prince of Wales, on Tuesday next, December 22. The opening ceremony will take place, as announced last week, in the theatre of the Royal Institution, and the assembled company will be entertained afterwards by the master of low temperature research. Concerning the magnificent new place of work for the prosecution of chemical and physical research, the opening of which the *Standard* rightly observes will mark a distinct advance in the opportunities for scientific investigation in London, there is much to be said, but this will be more in place next week.

THE DAVY-FARADAY RESEARCH LABORATORY, however, it ought to be explained, is and will remain distinct from the laboratories of the Royal Institution. Both are under the control of the same Committee of Managers, but they will pursue their respective tasks on somewhat different lines. Whilst the place indelibly associated with the names of Davy and Faraday will continue to be the workshop of a limited number of the master minds of science, the establishment which owes its existence to the munificence of Dr. Ludwig Mond is intended to serve more as a training ground of advanced character. No workers will be admitted unless they can prove their fitness to undertake original work, but once admitted every facility will be placed in the way of those whose good fortune it is to be considered eligible to work in this veritable palace of experimental science. But more of this anon.

THE WILLIAM GOSSAGE LABORATORIES, which were formally opened on Saturday afternoon last, constitute a notable addition to the facilities for practical work in science available at University College, Liverpool. Pharmacists visiting Liverpool during the Conference week will recall the aspect of the new buildings, which complete the Brownlow Street frontage, though they were then in an unfinished state. The William Gossage laboratories comprise five rooms in the new extension, including a large laboratory, 60 feet by 32 feet, with benches for forty-four students; a room provided with various appliances for the service of the main laboratory; a lecture room to seat seventy or eighty students; a preparation room, and a gas analysis room. The new buildings also contain a metallurgical laboratory, with furnaces and other equipment; an addition to the research laboratory; an apparatus and chemical store; a dynamo room, an electric accumulator room, and a heating chamber. Liverpool is therefore not likely to suffer from lack of accommodation for advanced students in chemistry for some time to come.

THE MAIN LABORATORY is excellently equipped and adapted to the requirements of those working in such places. It has a fine open timber roof, walls of ivory glazed bricks, and is admirably lighted by lofty windows and skylights. The benches are of polished pitch pine, with teak tops, and half-closed chambers are placed in the middle of each, being so constructed that they have a really efficient draught which carries away all fumes from small operations without allowing any to escape into the room. The whole ventilation of the room—some 125,000 cubic feet per hour—passes through these students' fume chambers and the larger ones on the walls, down to a wide subterranean chamber ending at the base of a tall up-cast shaft, where a coke fire maintains a strong draught. In this way only can air escape from the laboratory, and as a result the hygienic conditions closely approach the ideal.

PROFESSOR RAMSAY, by the way, urged in his address at the opening ceremony that laboratories should not be too luxurious. Though he did not advocate a reversion to the kitchen of Berzelius, or to the still more compact tray of bottles, pipe stems, and candles of Wollaston, he maintained that Heaven helps those who can help themselves. To begin in the lap of luxury, he said, leads to effeminacy and incapacity, and he could imagine a latter-day student, plunged into the penury of a works-laboratory, weeping because no sulphuretted hydrogen was laid on, because to obtain steam he had to boil water, or because a vacuum could not be procured without manual labour. As an engineer should be able to make his own tools, so should a chemist. Starting from crude material he should be able to produce pure chemicals; starting with glass tubes he should be able to extemporise a blowpipe, and make the most complicated apparatus. He should be a reasonably good gas-fitter and turner; he should be able to solder a joint; and he should be able to turn to account nearly every apparently useless article. Faraday's 'Chemical Manipulation' was recommended as a treasure-house of hints, though we have added to his store. "Now, if the student has a shop at the corner where all possible things may be procured, if he works in a laboratory where he has merely to turn a stopcock and results pour out, he loses by not having passed through the ordeal of hard experience. A little time is lost, but here loss of time is an advantage; loss of time means gain in every other respect." These remarks gave an exceptional value to the address, which was concluded by the assertion that it is the good word of his teachers that gains a student a position in making a start in the world, much more than a high degree awarded on the result of an examination. This was well and truly said.

THE LINCOLN DECISION regarding the sale of Battle's vermin killer (see p. 540) is useful as directing attention to the need of constant watchfulness on the part of registered chemists, to secure the fulfilment of all the necessary formalities in connection with the sale of scheduled poisons. In this instance strychnine had been supplied through the post to the written order of a person not known to the sellers, and the magistrates convicted the defendants under Section 17 of the Pharmacy Act, on the grounds that the purchaser was unknown to the sellers and not introduced by some person known to them, and also because they omitted to register the sale as required by the Act. The bearing of this decision on cases where the person requiring the poison is known to the seller, but sends the order by post or by the hands of a messenger not personally known to the seller, seems fairly obvious, and though it

may appear troublesome to carry out the regulations in their entirety, it is clear that in the public interest it must be done.

ARSENICAL SOAP has again made its appearance at the Brentford Police Court (see p. 541), but whereas on the former occasion (see *ante*, p. 521) the presence of one part of arsenic in a million was held to be equivalent to its entire absence, and the defendant was fined accordingly, on Saturday last the same bench of magistrates found that proof of the presence of one part in seven hundred thousand justified them in dismissing the case. It is true that the analyst in the first case could find no arsenic, whereas he now certified the presence of the insignificant quantity mentioned; but even though—as the Chairman contended—the product may properly be termed arsenical soap if there is any arsenic present at all, it is difficult to decide in which of the two cases straining at the gnat was most pronounced.

DISCOURTESY is attributed to us because, when publishing "Fair Play's" letter a fortnight ago, we felt constrained to regard the matter referred to by our correspondent as due to an "oversight" rather than to wilful "plagiarism," the term actually employed in the letter as received. For this letter, strange as it may appear, actually was sent in to the Journal and not concocted for the occasion by a member of the staff. Indeed, but for its arrival, attention would not have been directed to such a trivial matter, in the belief that the information had not been copied directly from our pages, but rather obtained at second-hand. The article was sent to the Journal by the author as an original communication, and his manuscript still exists to prove that fact if necessary. It was subsequently copied by Indian papers and by other publications with acknowledgment, and had our contemporary adopted the simple precaution of acknowledging its indebtedness to the Indian papers—the dates of which are not given, by the way—from which the information was derived, the case would have resolved itself simply into one of excusable error. As matters stand, however, the omission of the name of the immediate source of the information fully justified the use of the terms "inadvertence" and "oversight."

THAT CERTAIN ITEMS OF INFORMATION found in a given number of the Journal may have been referred to in some other paper, one, two, or three weeks previously, cannot be gainsaid, but unless some other paper is quoted as the source of such information—and except through "inadvertence" no matter is reprinted in the *Pharmaceutical Journal* from any other paper, however obscure, without acknowledgment—it has been communicated to us direct. Our staff is too small, and time too precious, or it might not be difficult to prove that much information appears in other papers one, two, three, or more months after it has found a place in our pages, as in the case under discussion. But we do not often complain, having other matters of much greater importance to attend to. And above all else, we are not prone to credit ourselves with a grievance, as was recently done elsewhere, on the ground that a contemporary has quoted facts from one of its own early volumes to correct an error that has crept into an official publication. Such conduct might be regarded as distinctly lacking in courtesy, and is obviously to be avoided.

ANOTHER ACETYLENE EXPLOSION has occurred, this time in Berlin, and caused the death of four persons. According to the *Daily Chronicle*, as the use of acetylene gas is prohibited in Germany, owing to its explosive character, a chemist named Isaac had for some time past been making experiments with the view of depriving it of that dangerous quality. In response to a desire expressed by Herr Thielen, the head of the Imperial Rail ways, to see the process conducted in Herr Isaac's laboratory, the inventor, who had hitherto experimented on a small scale only, prepared a large quantity of acetylene gas by his new method, so the report runs, and as he was subjecting it to the enormous pressure of about one hundred atmospheres, the tube exploded, blowing him and three of his workmen to pieces.

THE DANGERS OF ACETYLENE have induced the Fire Offices-Committee to call attention to the risk to life and property arising from the storage or deposit of calcium carbide. In the circular dealing with the subject it is gravely stated that the storage of liquid acetylene, "unless in hermetically sealed metal drums" and in suitable places, is also attended with similar risk, but the Committee has "not as yet heard of any cases of such storage in this country." Nor is it likely that the Committee ever will, for the "drum" that will retain liquid acetylene has yet to be invented. Calcium carbide is regularly stored in hermetically sealed metal drums, and such drums are now being made so strong, with bolted joints, that there is practically no risk of danger, even though they be in the midst of fire, and water poured on them. The liquid acetylene, however, has only been supplied in steel cylinders, one of which recently exploded in Paris and killed two men, besides causing serious damage to property.

THE CHEMISTS' ANNUAL BALL will be held for the thirty-first time on Wednesday, January 20, the place of assembly being as usual the Portman Rooms, Baker Street, W. Attention is directed to the list of stewards published in the advertising columns of the Journal this week, additions to which should be promptly indicated to the honorary Secretary, Mr. John C. Umney, 50, Southwark Street S.E., who will also be glad to receive applications for tickets (ladies', 12s. 6d. each; gentlemen's, 17s. 6d.) as early as possible, since the necessary arrangements will thus be greatly facilitated.

THE MIDLAND PHARMACEUTICAL ASSOCIATION will hold its twenty-fourth annual ball, at the Grand Hotel, Birmingham, on Thursday, January 21. Particulars may be obtained of the honorary Secretary, Mr. Charles Thompson, 159, Stratford Road, Sparkbrook, Birmingham, who will also be pleased to arrange for the engagement of rooms at the hotel, to suit the convenience of friends living at a distance. Applications for tickets, etc., should be made without delay.

'MORING'S QUARTERLY,' published by Thomas Moring, 52, High Holborn, W.C., is an interesting new publication, the second number of which contains articles on methods of reproduction for book illustrations, including wood engraving, line and stipple engraving on metal, etching, mezzotint, aquatint, lithography, and Professor Herkomer's new method which was described in the last volume of the Journal (p. 92). Photographic methods, which have ousted the older processes to such a great extent, are to have a special article devoted to them in a subsequent number of the *Quarterly*. In the present issue there is also an illustrated article on "Foreign Heraldry," whilst a similar one on "Seals" is promised for the January number, if it can be prepared in time.

THE CHRISTMAS VACATION will necessitate the closing of the Journal pages for press a day earlier than usual next week, a fact which correspondents are requested to note. The office of the Secretary of the Pharmaceutical Society will be closed on Friday and Saturday next week, as well as the Library and Museum, which will, moreover, remain closed in the evenings after Wednesday next until Wednesday, January 6. The Society's House in Edinburgh will be closed on Christmas Day and New Year's Day.

THE WORLD OF PHARMACY.

BUSINESS MEETINGS.

Chemists' Assistants' Association, Thursday, December 10—Mr. C. Morley, President, in the chair.—A paper on "The Foundation of Chemistry as a Quantitative Science" was read by Mr. C. A. Hill, who commenced his paper by stating that when reading an historical account of experimental inquiries made long ago in chemistry one is bound to perceive how widely the science of to-day differs from the alchemy of olden times. Modern chemistry is a quantitative science, and is essentially a science of measurement, whether of mass or of volume. Vague and indistinct were the ideas of alchemical "essences" and "principles," but we have very definite conceptions now of chemical "elements," and we can determine how much of a particular element a given amount of body contains. Mr. Hill then dealt with the theories concerning combustion put forward by Boyle, Stahl, Hooke, Mayow, J. J. Becher, and Lavoisier. He said the "phlogiston" theory, as expounded by Stahl, held sway for a hundred years, and in the overthrow of that theory and the recognition of the part played by oxygen in combustion, the foundation of modern chemistry consists, and it was only by careful quantitative experiments that Priestley and Cavendish discovered the facts which enabled Lavoisier to place modern chemistry on a firm basis. The classical researches of Black on the carbonates of the alkalies and alkaline earths, and the discoveries and experiments of Joseph Priestley, Rutherford and Scheele with oxygen and nitrogen were described, and the services rendered to chemistry by Lavoisier touched upon. In connection with the doctrine of "proportions by weight," the researches on the quantitative composition of metallic salts by J. B. Richter, Wenzel, and Claude Berthollet were mentioned. In concluding his paper Mr. Hill clearly explained the difference between the "atomic theory" as propounded by John Dalton and by William Higgins. Higgins held that atoms combine to form the molecules of compound bodies, and that they must unite singly or by twos or threes. Dalton declared atoms to be different, and that "the relative atomic weights of the elements are the proportions by weight in which the elements combine." Dalton's hypothesis was a chemical one, and also a quantitative one, and these two differences between it and other atomic theories gave it the place it now holds in chemical science. At the conclusion of the paper the President thanked Mr. Hill for the thorough and exhaustive manner in which he had dealt with his subject, and said we are all much indebted to the chemists of a hundred years ago for the rational ideas upon which chemistry is now based.

School of Pharmacy Students' Association, Friday, December 4.—Mr. Thomas Tickle in the chair.—A paper was read by Mr. Wilfrid Lean on "Concentrated Infusions." He pointed out that much has been urged both for and against concentrated infusions, but many of the objections to them, raised when they were first introduced, have become groundless owing to vast improvements in their preparation. There are several points in which concentrated infusions show a marked superiority over their official allies—

1. *Convenience.*—This is at once apparent in those cases where, owing to the uncertainty and waste attaching to it, the custom of preparing the fresh infusions required for each day's dispensing, and rejecting the unused portions, cannot be followed. It would therefore be a great boon if the use of concentrated infusions were officially sanctioned, for then the 90 per cent. or so of British pharmacists, who at present use the concentrated preparations more or less frequently, could do so with an easy mind. The time taken in the preparation of fresh infusions is very considerable, often causing great inconvenience when the medicine is wanted quickly, whereas the time taken to dilute the concentrated infusion is practically nothing, and saves much valuable time.

2. *Economy.*—The method of preparation of fresh infusions entails a loss of product through the absorbing power of the drug, which is not to be pressed in the process; also the drug is not completely exhausted of its active matter during one infusion. The preparation of concentrated infusions, on the other hand, avoids this waste by insuring complete exhaustion or pressing the drug during the process.

3. *Permanence.*—The use of spirit in their preparation, the presence of albuminous, starchy, and mucilaginous matter is obviated, and therefore the liability of the infusion to decompose is greatly lessened. The presence of spirit is so small, about 2½ per cent. in the diluted infusion, and the advantages derived from its presence so great, that the end quite justifies the means.

4. *Uniformity.*—If made to come up to an official standard, there would be much greater uniformity in successive lots of the same infusion than at present, for it is seldom that any two consecutive samples of fresh infusion agree either in strength or appearance, owing chiefly to the very indefinite directions in the B.P. as to the state in which drugs are to be used, and also to neglect in observing the stated times for infusing.

5. *Appearance.*—The concentrated infusion produces an elegant mixture generally free from deposit, instead of one with the appearance of having been slovenly dispensed.

6. *Method of Preparation.*—In the case of concentrated infusions, this is much more scientific and common-sense. The use of cold water is calculated to give much better results with almost all drugs, as the active ingredients are soluble in it; volatile constituents are not dissipated, and much inert objectionable matter is not dissolved. Processes must be suited to each drug, and not the same one applied to all drugs indiscriminately, which is certain not to produce good results. It has been proved that when properly made, the concentrated preparations give even far better infusions in many cases than the fresh article.

Liverpool Pharmaceutical Students' Society, Thursday, December 10.—Mr. John Jones in the chair.—Mr. Jones exhibited two very fine specimens of Indian bael fruit, and Mr. Wyatt an exceptionally large-grained maize which had been recently imported from Peru. Specimens of horned galls were also shown by Messrs. Wardleworth and Wyatt, which though coming from Japan tallied with the characters given in the Pharmacographia for the Chinese galls said to be yielded by *Rhus semialata*, N. O. Anacardiaceæ. Their active principle is gallo-tannic acid similar to that from oak galls, of which they yield about 60 to 70 per cent. They are not in much demand in England, but are largely used in Germany by manufacturers of pyrogallol and gallic acid. Unlike the oak galls which are caused by the deposition of the ova of species of *Cynips* or *Diplolepis*, these horned galls are produced by the agency of an aphis, and if one be opened a white velvety mass containing the remains of countless defunct aphides will be found in the interior. Mr. Wardleworth, in describing the specimens, said that it was worth noting that these galls, though coming from trees of quite a different order to the Cupuliferæ, yield a tannin similar to that of oak galls, and according to the chemical treatment to which they are subjected, it is possible to obtain from them either tannic or gallic acids. It was quite to be expected that they would give gallic acid, Mr. Wyatt said, for the simple reason that gallo-tannic acid is of glucosidic nature, and, therefore, if the galls were acted on by a ferment or by boiling with a dilute acid they would yield gallic acid and glucose by hydration of the tannin.—Mr. Cowley pointed out to Mr. Wyatt that the generally received notion now-a-days among chemists is that tannic acid is an anhydride and not a glucoside.

"Flour" or "Flowers" of Sulphur.

The meeting was asked by Mr. R. H. Mitchell what must be regarded as the most correct method of describing sulphur sublimatum? Was it "flour of sulphur" or "flowers of sulphur"? The drift of the discussion was that, reasoning from analogy with "flowers of benzoin" and "flowers of camphor," both made by a similar process, it should be flowers of sulphur, and on being put to the vote this was agreed to almost unanimously.

The Fertilisation of Plants.

Mr. Prosper H. Marsden, Ph.Ch., F.C.S., pharmacist to the Royal Infirmary and lecturer on pharmacy in University College, then proceeded to give a lecture on "Fertilisation of Plants," a subject, he stated, which could not fail to interest even the most superficial student of Nature. By the help of a diagrammatic cross-section of a perfect flower, thrown on the screen from the optical lantern, the lecturer explained the various stages in the pollination and subsequent production of seed, remarking upon the different ways in which the pollen was conveyed to the stigma in anemophilous, entomophilous, and self fertilisation. The part played by the colour of flowers in insect or entomophilous fertilisation was touched upon, and reference was made to the observations of Darwin, Huxley, Lubbock, and others who had worked on the subject. The terms "protandry," "protogyny," and "cleistogamy" were then explained and illustrated

after which a short account of the methods to secure "cross-fertilisation" and the benefits derived from it was given, assisted by some good slides showing typical dimorphic flowers—those of *Primula veris* and *P. elatior*—and trimorphic exemplified in *Lythrum salicaria*. The plant-hairs in *Aristolochia clematitis* and *Arum maculatum* were shown to have a very important influence on the successful fertilisation of the flowers, those in the tube of the corolla of the one, or in the spathe of the other, pointing downwards, allowing insects to penetrate as far as the stigma, but holding them prisoners until they had properly effected fertilisation by the pollen grains they had carried down with them. The numerous interestingly complicated arrangements for securing effective fertilisation in the case of the orchid family generally were lucidly pointed out by the lecturer, who was provided with some orchids with which he gave a demonstration at the close of the lecture. The beauty of the adaptation to its environment shown by the evening primrose, *Œnothera biennis*, which if not fertilised at night-time by insects remains open the following day until visited by butterflies, was remarked upon, and the poet Browning's interpretation of the flower's tender allegory was recited. The well-known plant so plentiful on the sandhills to the north of Liverpool—*Parnassia palustris*—was cited as an excellent example of self-fertilisation by an easily seen movement of its stamens, which advance in turn to fertilise the pistil, and then drop back to their place when the operation is accomplished. In conclusion, Mr. MARSDEN said that in a subject such as he had chosen for his lecture, one was compelled to utilise the work already done by others; therefore he trusted that his hearers would pardon his frequent references to standard authorities as he had been naturally obliged to do so with such a far-reaching field for observation. However, what little he had been able to teach them new that evening, he trusted would only serve to stimulate their study of and inquiry into one of the most profitable and at the same time interesting of botanical subjects.

Aberdeen Junior Chemists' Association, Friday, December 11.—An interesting lecture was given by Dr. T. S. Murray on "Glass," illustrated by a large number of beautiful specimens, whilst at the close the lecturer gave a practical demonstration of glass-spinning.

Brighton Junior Association of Pharmacy, Wednesday, December 9.—Mr. G. F. Lemmon lectured on the subject of "Comets and Meteors," and with the assistance of lantern illustrations gave an exceedingly lucid and instructive description of these eccentric celestial phenomena. In ancient times the appearance of a comet was supposed to be a forerunner of some great calamity, war, famine, death of kings, etc., and according to description were of most fantastic shapes, but the use of the telescope has done away with all that. Some splendid pictures were shown of photographs of comets and meteors taken by means of the "Lick" telescope.

Manchester Pharmaceutical Association, Wednesday, December 9.—Mr. G. S. WOOLLEY, President, in the chair.—Mr. J. RYMER YOUNG, of Warrington, lectured before a large audience on a most interesting subject, the title of his lecture being—

FROM ALCHEMY TO PHARMACY.

The lecturer, in his opening remarks, dwelt on the fact that the ancients appeared to have made but little progress in any of the natural sciences, dividing all human knowledge into three parts—logic, physics, and ethics—mental, natural, and moral philosophy. The science of chemistry did not owe its existence to any one people or to any sudden process of development, but was the outcome of a prolonged process of evolution. The basis of the edifice was sunk deep in Eastern soil, for there was ample proof that the Chinese had some knowledge of alchemy centuries before the Christian era; the walls were slowly and laboriously raised during the middle ages, and were completed by Lavoisier, Black, and Priestley, and to continue the allegory, the chemistry of our own day and generation, might be regarded as working at the roof. It was not until 1770, when Lavoisier conclusively disproved the old Thalesian theory which had endured for twenty-four centuries, by showing that water cannot be changed into earth, although it be distilled backwards and forwards hundreds of times. This was by no means a solitary example of the permanence and fixity of old ideas and errors. The people who professed to make gold were called alchemists, and the word alchemy, as he had endeavoured to show, signified the "hidden" or "obscure" art, the reason why they practised it with such secrecy being easy to understand. Throughout the period during which alchemy flourished, the belief in witchcraft, necromancy, and magic of all kinds was universal, and surely it was less wonderful to change lead or tin into gold than to call up the spirit of one's grandmother, or to bestow perpetual youth upon a nonagenarian. Had we not in our own times superstitions and beliefs? Had we not yet mesmerists and phrenologists, theosophy and spooks, palmistry and fortune-telling, spirit-rapping, thought-reading and graphologists, with credulity enough to make them all pay, for they do pay. Alchemy was regarded as rational enough two centuries ago, and was among the lesser forms of magic, since it did not usually require the influence of supernatural causes. The Egyptian origin of alchemy was dealt with, and alchemists of various ages illustrated, all of a most interesting character.

Proceeding, Mr. YOUNG said: With the alchymist I have now finished. John Mayow, an Oxford student (born 1645), wrote a most important book, containing experiments forming the basis of pneumatic chymistry. It is also distinguished by accurate reasoning, and is quite free from alchymical taint. Mayow's second treatise on respiration expresses views far in advance of his predecessors. He completely upset the four-element theory by demonstrating the compound nature of air, and recognising oxygen and nitrogen as clearly as they were recognised a hundred years later. In Mayow's time alchymy was fast waning before the advances of the new rational philosophy, for as superstition retreats, and as men begin to devote their energies to the legitimate investigation of Nature, a false and chimerical art must of necessity cease to find votaries. Alchymy was indeed to all intents and purposes dead, though a few obscure disciples of the art remained up to the close of the eighteenth century. The last of them was Peter Woulfe, who died in 1805. In 1774 Priestley announced his discovery of oxygen gas, and it may be said without qualification that this was the most important chemical fact discovered up to that time. I need hardly remind you that he came to Warrington in 1761 as "tutor in languages" to the old Academy. Here he taught Latin, Greek, Hebrew, French and Italian, civil law, and logic, and yet found time to marry the daughter of an ironmaster, near Wrexham. Here, also, he became acquainted with Benjamin Franklin, but for whose influence much of Priestley's work might have been left undone. Heresy, not only in religion but in political views and in social life, has ever been to the ordinary man the one unpardonable sin. Priestley's political opinions gave offence to men in power, and after his library, manuscripts, and house were burned to the ground by the mob, he was finally obliged to quit the country.

I have already said that with Lavoisier came the triumph of truth over fanciful error, but it was a prolonged and hard-won fight, or rather one of a series of fights, carried on by the workers that came after the great French chemist, and of these no man had rendered greater service to the advancement of the science of chemistry than John Dalton, who was born in 1766 at an obscure little village in Cumberland. John does not appear to have been a quick boy either at work or at play, but he was steady-going, thoughtful, and fond of books, and in 1785 became joint-manager of a school at Kendal, but was by no means successful. He afterwards taught mathematics and natural philosophy at New College, Manchester, and 1792 made his first visit to London, which he described as "a surprising place," but "the most agreeable spot on earth for one of the contemplative turn of mind." In 1794 he first described colour blindness, being himself an instance of it. Discovery of his own defect arose through the purchase of a pair of stockings as a present for his mother, who was a Quaker. That lady was startled by their appearance—their colour being a brilliant red—quite unfit for any member of the Society of Friends to wear. To Dalton they were the correct dark-bluish drab. It was in 1802 that Dalton gave to the world his magnificent conception known as the atomic theory—a theory which is adopted and established all over the scientific world. The fact of the inaccuracy of some of his earlier determinations should not be allowed to detract from the grandeur of his idea—rather should it enhance our admiration for his genius—that, with means so imperfect he could achieve so much. It is all very well in these days of splendidly appointed laboratories to make light of the crude method in use in Dalton's time. Nevertheless it was Dalton's intuitive penetration and patient thought which transformed the old atomic theory from a baseful fancy into a resistless truth.

Sir Humphry Davy's work comes next in order. His name has become a household word, for I suppose there are few who have not heard of Davy's safety lamp. His work has enriched science with a number of brilliant discoveries, but the best of them all, as he himself said, was the discovery of Faraday. Faraday was one of the most indefatigable, self-sacrificing, pure scientists of modern times—simple, kindly, gentle—he captured the hearts of all who knew him. As a lecturer and demonstrator he has probably never been excelled. he contrived by his own earnestness to bring out new beauties in the most common-place facts, and in his enthusiasm over facts of singular beauty he forgot everything except his own delight, by force of which he and his audience were alike carried away. It need hardly be said that the Germans have been largely responsible for the development of the modern science. Justus Liebig, Ginelin, and Hoffman particularly in the department of organic chemistry. It took Liebig many years to perfect his system of organic analysis, but his labours culminated in the development of the process which, with slight modifications, is in use at the present day.

Lastly, brief reference must be made to the invention of the spectroscope, an instrument of increasing importance to the chemist. Roscoe, who was for many years Professor of Chemistry at Owens College, says, "The spectroscope, next to the balance, is the most useful and important that a chemist possesses" Crookes has remarked, "If I name the spectroscope as the most important scientific invention of the last fifty years, I shall not be accused of exaggeration." The very importance of the subject precludes discussion of it here, since it has come to form a distinct branch of chemical science. In the hands of men like Bunsen and Crookes it has explored the recesses of the rocks for minute traces of hidden treasures, while with its workers like Miller, Huggins, and Lockyer, have fathomed the abysses of space and determined the constitution of the stars. I have endeavoured to give some outline of the history of this science from its commencement in the crude metallurgical operations of the ancients down to the time when a comprehensive system of chemistry was established, at which point I must leave. When we think of the gigantic importance of the science in our own day, the numberless high class text books which are to be found in every language, the splendid laboratories springing up in every country, the efficient chemical schools in every town, and the immense amount of original research carried on under the most favourable auspices, we need to think kindly, and with charity and gratitude of those grandly energetic, mistaken men, who hundreds of years ago spent their lives and fortunes in trying to grasp the unattainable.

It may be said that these men were in the main moved by no very noble ambition; their chief object was to find a way to make gold, a desire indeed not yet extinct in modern times. We simply differ as to the method. Some have tried to find wealth in ship canal shares, and like the alchemists of old, were doomed to disappointment.; others have found a veritable gold mine in Brunner, Mond and Company, and in Stock Exchange Speculation. Many have won—more have lost. Well, as we know, the alchemists never achieved the great hope of their lives, but in their search for it they achieved so much that was far better—they desired, as Sheridan puts it—

> Not to show occurrences that
> Happen every day, but things just so
> Strange, that though they
> Never did, they might happen.

They looked for gold, and found sulphuric acid; they sought for the elixir that should confer perennial youth, and in their failures laid the foundation of a mighty science. Alchemy is in very truth dead, but Phœnix-like, from its ashes has risen modern chemistry. The cold realities in which the old dreamers were so disappointed were, in the truest and best sense, blessings in disguise, though they knew it not. In conclusion, let me quote a few words only, from Roger Bacon:—"I hope ere this time thou hast surelie found out the words already spoken (if thou bee'st not most dull, ignorant and foolish) the certain matter of the philosopher's blessed stone."

PUBLICATION RECEIVED.

British and Colonial Druggists' Diary, 1897. Pp. 383. VI. London: "British and Colonial Druggist" Office, 42, Bishopsgate Without, E.C. From the Publishers.

LEGAL INTELLIGENCE.

PROCEEDINGS UNDER THE PHARMACY ACT.

The Sale of Battle's Vermin Killer.

Case under Section 17.

At the Police Court, Lincoln, on the 11th inst., before Dr. George Mitchenson and Richard Hull, Esq., Justices, Messrs. Battle, Son, and Maltby, chemists, of High Street, Lincoln, were summoned by T. W. Stroud, for and on behalf of the Pharmaceutical Society of Great Britain, for offences under Section 17 of the Pharmacy Act, 1868.

Mr. R. E. Vaughan Williams, instructed by Messrs. Flux, Thompson, and Flux, appeared for the complainant.

Mr. J. G. Williams represented the defendants.

Mr. Vaughan Williams said in this case the defendants' firm was charged under the Pharmacy Act, 1868, with not having complied with the section of the Act which applies to the regulations to be observed on the sale of poison. It would not be necessary to direct the attention of the Bench to the importance of the Act, but he would have to call attention especially to the provisions relating to the sale of poisons and the precautions which are required to be taken by qualified chemists. The second section dealt with poisons, and was as follows:—

> "The several articles named or described in the Schedule A shall be deemed to be poisons within this Act, and the Council of the Pharmaceutical Society of Great Britain may from time to time by resolution declare that any article in such resolution named ought to be deemed a poison."

Any such resolution has to be submitted for approval of the Privy Council, and if approved advertised in the *London Gazette*. The poison to be dealt with in this case was strychnine, one of the poisons to be found in the first part of Schedule A, and under the powers contained in the Section referred to preparations of strychnine have been added to the Schedule. The Schedule is divided into two parts, the first part deals with the more deadly poisons, the second part with the less deadly ones. He then came to Section 17, which deals with the regulations. By the terms of that section no one of the poisons named in the schedule could be sold unless the box, bottle, vessel, wrapper or cover was labelled with the word "poison," the "name of the article," and the "name and address of the seller," and the subsequent provisions as to entry in a book of certain particulars in the form prescribed by the statute, and the requirement that the seller must know the purchaser or be introduced by someone known to him applied only to the poisons in the first part of the schedule. There were four summonses against the defendants relating to sales of "strychnine" in what is known as "Battle's vermin killer"—one on October 21, and the other on November 18 last—two of the summonses were for omitting to comply with all the requirements as to labelling which apply to all scheduled poisons, and the other two were for contravention of the regulations respecting the poisons in Part I. of the Schedule. On October 20 last Mr. Moon wrote to the defendants' firm for a packet of their "vermin killer," enclosing four stamps to pay for it and the postage back to him, and on the following day he received a packet by post, the postmark on the envelope being Lincoln. By selling this poison in that way defendants omitted to comply with any of the regulations concerning the sale of poisons in Part I. of the Schedule. The second purchase was made by Mr. Foulds when he went to defendants' shop on November 18. On that occasion the Act was infringed in that Mr. Foulds was not known to the sellers, and was not introduced by anyone known to them. He should call evidence that the packets of vermin killer contained "strychnine." The first summons charged defendants with not labelling the packet with the name of the article (which he considered meant the name of the poison), or with their name and address. The second summons is for not complying with any one of the provisions relating to poisons in the first part of the Schedule, which were certainly very important, and in this instance of a serious character, for if anyone is to be at liberty to sell poison through the post the provisions of the statute will become nugatory. The third and fourth summonses were for offences similar to the others, but relating to the sale on November 18. Counsel concluded by saying: I shall submit that when I have proved that the packet purchased is found to contain a poison, it is not a compliance with the Statute to label that packet with any fancy

name the sellers choose to give it, but that "article" in the Pharmacy Act means the name by which that poison is known to the Statute. With regard to the labelling with the name and address of the sellers, I submit that the stamp "Battle's Lincoln Vermin Killer" on the smaller packet, which is closed on three sides only, and is contained in a closed envelope, upon which are the words "Battle's Vermin Killer" and the word "poison," does not comply with the provision requiring labelling. There was no sufficient name and there was no address of the seller. I submit that the name on the inner envelope is not sufficient, and that it is necessary that the information should be placed on the outside of the fastened wrapper. On the outside, too, should be the name of the poison, and it would not do to use another name such as "Turkish Delight" or "Armenian Delight," for that would be no protection to the public. The proceedings were taken at the instance of the Pharmaceutical Society, who were particularly concerned to see that the Statute was complied with.

Magistrate's Clerk: Will you take the summonses together.

Mr. J. G. Williams: I do not know if the Society wish to press for penalties in each case, or will be content to take one summons and let the others drop. I submit there is only one offence.

Magistrate's Clerk: The offences are separate; there is the offence which relates to all the poisons in the Schedule, and another offence which relates only to Part I. of the Schedule.

Mr. Vaughan Williams: The Pharmaceutical Society have no desire to be vindictive, and have taken these proceedings solely in the interests of the public. There are, however, different circumstances in connection with the sale on each day, and I think I ought to ask for a conviction on each summons.

Mr. H. Moon, examined by Mr. Vaughan Williams: I live at Brockley. On October 20 last I sent a letter to Messrs. Battle, Son, and Maltby.

Mr. Vaughan Williams: I call for that letter.

Mr. J. G. Williams: I do not produce it.

Mr. Vaughan Williams: I will read a copy of the letter.

Witness: I posted that letter on the 20th, at Brockley Road. I received by return of post a packet of Battle's vermin killer in the envelope produced. I did not sign any book before receiving it. I did not know any of the members of the firm. On November 18, I accompanied Mr. Foulds to defendants' shop. He purchased a packet of vermin killer, and shortly after handed it to me. Both packets were subsequently handed by me to the analyst.

Cross-examined: I did not register the letter I sent.

Re-examined: I have never written to anyone else for a packet of vermin killer.

Mr. Arthur Foulds, examined by Mr. Vaughan Williams: On November 18 last I went to defendants' shop in Lincoln. I purchased a packet of Battle's vermin killer. I was asked to append my signature to an entry in a book. I had never been in Lincoln before, and I did not know the person who served me. Mr. Moon accompanied me to the shop, and shortly after coming out I handed the packet to him. The packet was closed up when I bought it.

Mr. E. J. Eastes, F.I.C, examined by Mr. Vaughan Williams: On November 21 I received from Mr. Moon the two packets produced; they were fastened up at that time. I have analysed the contents of each packet. The packet purchased October 21 contained 18·7 grains of a blue powder, consisting of a mixture of flour, strychnine, and Prussian blue. The powder contained 10·1 per cent. of strychnine; the amount of strychnine present was 1·9 grains. The other packet contained 18·8 grains of a similar powder, with 9·7 per cent. of strychnine. The amount of strychnine present was 1·8 grains.

Mr. Vaughan Williams: I submit I have proved sufficient to entitle me to a conviction on all the summonses. As to the purchase on October 21, there was the fact beyond any doubt that there was no true name and address on the wrapper, and by sending it through the post, by far the most dangerous method of sale to the public, the regulation affecting sales of poison in Part. I. of the Schedule could not have been complied with. Upon the second purchase there were similar offences concerning the labels, and although in that instance possibly a somewhat less serious offence had been committed, inasmuch as the purchaser was required to sign an entry in a book, the main requirement that the purchaser must be known to the seller or introduced by someone known to him, was wholly disregarded.

Magistrate's Clerk: The article is called "Battle's Vermin Killer." You say the specific poison must be named?

Mr. Vaughan Williams: Yes, the poison must be called by the name given to it in the Statute.

By the Bench: That is the name of the article.

Mr. Vaughan Williams: As regards this Act, the name of the article in this case is "strychnine."

Mr. J. G. Williams, after raising some formal objections which were overruled, said that so far as the defendants were concerned, they did not wish this case fought out in the strictest form. He was not there to admit all of the charges, but so far as the sale through the post to Mr. Moon was concerned there had been inadvertence. Very often samples were sent for and refused. It was a singular thing that defendants' name was not on the envelope, and he suggested it might have come from anyone. Apparently it came from defendants' shop, the letter was sent as a trap, they fell into it and they must take the consequences. Then as to the sale to Mr. Foulds, as he gave his address at the Great Northern Hotel, the assistant who served him concluded it was for the proprietor, who was a regular customer. Everything was done in his case except that he was not known to the seller, or introduced. Then as to the wrappers it was true there were three wrappers around the powder, and he submitted that it was sufficient if either one was labelled with the name and address of the seller, and as to the name of the poison he submitted that the Statute did not require the name "strychnine" to be put upon the vermin killer. Section 17 did not say the name of the poison, but the name of the article. He further submitted that Battle's vermin killer was a compound, and he relied upon the judgments in the case of the Pharmaceutical Society *v.* Piper as showing that a compound containing a scheduled poison was properly described by the name of the compound, and upon the fact that vermin killer is the name of a poison known to the Statute. By an order subsequent to the Act "vermin killer" had been introduced in the Schedule, and he contended that "vermin killer" was the name of the article as known to the Statute. In the list of scheduled poisons published with the 'Annual Register,' it was mentioned by that name as a poison in both parts of the Schedule. If his contentions were right, it got rid of two of the summonses; and as to the others, he urged that at the most there had only been technical omissions.

Mr. Vaughan Williams having replied,

The Chairman said: Do you contend that the inside wrapper did not contain the stuff.

Mr. Vaughan Williams: I say the Act means the wrapper which fastens up the stuff.

The magistrates retired to consider their decision. On their return.

The Chairman said: After careful consideration the magistrates have decided to dismiss the summonses which apply to the labelling, but as to the second and fourth informations, which apply to sales of poisons to persons unknown to the sellers, and not introduced by some person known to them, and to the omission of the regulations as to entry in a book, they have decided to convict.

On the second information, where the packet was sent through the post, defendants will be fined 20*s.* and £3 17*s.* costs.

On the fourth information, they will be fined 10*s* and 14*s.* costs.

Mr. Vaughan Williams said it was a very important matter to the Society, and the public required protection, and he had to ask that the Bench would state a case upon the questions arising on summonses 1 and 3.

The Chairman: Certainly. We quite understand the importance of the whole matter.

PROCEEDINGS UNDER THE FOOD AND DRUGS ACT.

The Sale of Arsenical Soap.

At the Brentford Police Court on Saturday last, an important judgment dealing with the sale of arsenical soap was given by the justices, Mr. G. G. Mackintosh being Chairman. Thomas Turner, chemist, of 292, High Road, Chiswick, appeared to a summons issued at the instance of Inspector W. Tyler for having sold arsenical soap not of the nature, substance, and quality demanded.

Mr. Arthur Hutton, instructed by Messrs. Thomson and Co., appeared to defend.

The inspector's assistant purchased for 10*d.* at defendant's shop a tablet of soap. The wrapper was labelled "Dr. Mackenzie's arsenical toilet soap. S. Harvey, London, 1*s.*," and the soap itself was imprinted with the same words. It was duly sent to Mr. E. Bevan, the county analyst, who certified in the following words:—"I am of opinion it contains only the minutest quantity of arsenic, not more than one-hundredth of a grain to the pound. N.B.—Such an amount of arsenic is absolutely insignificant, and is of no value.

This amount is not more than might be accidental to the materials of which the soap is composed."

For the prosecution the contention raised was that the case was on all fours with those of the previous week, when the justices convicted the sellers, with the exception that here there was a minute quantity of arsenic, whilst there there was no trace of arsenic. The amount here was so minute, however, as to be of no value as a preparation for the skin, and therefore the purchaser was as much prejudiced as if none at all was present.

In defence, Mr. Hutton said that he would admit all the facts, nor would he raise any of the points that had been put before the Court in the previous cases. He contended simply that the Bench had no power to convict if they were satisfied there was arsenic in the soap. He did not admit the analyst's statement that the presence of the arsenic was due to the component parts of the soap. He relied entirely upon the first portion of the certificate. There was the definite statement that arsenic was in the compound, and in the face of that he contended all the requirements of the Act had been complied with. The prosecution, in seeking to put upon the Bench the duty of deciding how much arsenic should be in the soap, or the drug, was imposing a difficult and troublesome, and at the same time unsatisfactory obligation, which he did not for one moment believe they would undertake. They had no standard upon which they could work or be guided, and really the decision would always rest between the buyer and seller. The maker of this soap issued a notice with every tablet which was an instruction to the buyer. "It contains a very small quantity of arsenic." That was notice to the purchaser which did away with prejudice, and that, together with the presence of the arsenic, removed the case out of the category of those already decided.

Inspector Tyler pointed out that in one of the cases already decided it was sworn arsenic was put in the soap, yet a conviction followed. Here the analyst certified that the arsenic might be no more than was ordinary to the soap itself.

Mr. Cunnington (on the Bench): Nonsense. Ridiculous. Do you mean to say there is arsenic in all soap made?

Inspector Tyler: I mean in most minute particles; also it was given in evidence that there was the millionth part of arsenic in it.

Mr. Hutton: On the last occasion it was sworn there was no arsenic in it. This time it is sworn there is. That is the difference.

Mr. Allen Brown (one of the Bench): Do you contend that it is absolutely necessary to artificially put in a certain amount of arsenic irrespective of the knowledge of the soap-maker that there is a certain amount of arsenic naturally in it?

Inspector Tyler: I submit that it should be. To be arsenical soap I contend that at least 1½ grain of arsenic per pound should be in it. Here we are dealing with 1/100th part of a grain.

The Chairman: The quantity is not laid down anywhere. If there is any arsenic at all, it may be called arsenical soap. There is no standard laid down, and we are unanimously of opinion there is no case.

The summons was therefore dismissed.

CREWE CORONER'S COURT.

Poisoning by Potassium Bichromate.

Mr. H. C. Yates, County Coroner for Cheshire, held an inquest at Crewe, on Monday, on the body of Mary Butler, a married woman, aged 29, who died under circumstances disclosed in the following evidence:—

Amos Butler, joiner in the employ of the L. and N. W. Ry. Co., residing at 88, Oakley Street, Crewe, said the deceased was his wife. She had been very delicate, suffering from dyspepsia, and latterly neuralgia. An aunt sent her a prescription for neuralgia the previous Wednesday. The prescription was written on two slips of paper (produced). It consisted of tincture of colchicum and bicarbonate of potash. The next day (Thursday) he was returning from work about 5·25 p.m. and sent a shopmate named Wilkinson into the shop of Mr. E. Booth, chemist, of Chester Bridge, for two-pennyworth of bicarbonate of potash. He gave him the paper with the name bicarbonate of potash written upon it. When he came out of the shop he handed the packet to witness. About 10 o'clock that night witness's wife took about a spoonful of it. A few minutes later she complained of violent pains in the stomach, and commenced vomiting. He prepared an emetic of mustard and water, but she refused to take it. Just after midnight he went for Dr. Wilson. He explained the symptoms to Mr. Howie, his assistant, and said what his wife had taken. The doctor sent a bottle of medicine and called the following morning. His wife died about 4 o'clock the same day. She was unconscious some time before death. When his wife got worse he looked for the wrapper which had contained the potash, and as far as he could make out from the writing, it was bicarbonate of potash. Albert Wilkinson, an apprentice joiner, said that Butler gave him the paper produced and asked him to get the bicarbonate of potash from the chemist's. Witness went into the shop and asked an assistant for twopennyworth of bicarbonate of potash. He read from the slip of paper, but did not give it to the assistant, nor could he say whether the assistant saw it. The assistant, after weighing it, asked if it was bicarbonate of potash he wanted, and he said "yes." The assistant wrote it on the packet. There was no label marked "Poison" on the wrapper, which had been destroyed.

Mr. Booth here said that joiners frequently used bichromate of potash for staining purposes, and the foreman of the jury (Mr. W. Hutton) confirmed this. The witness, however, said he had never heard of that before.

George Micklewright, an assistant of Mr. Booth's, said that a man came into the shop—he believed it was on Tuesday or Wednesday—and asked for two-pennyworth of bichromate of potash. He served it. The man was a stranger to him. He put it in a paper, and wrote on the wrapper in ink "Bichromate of Potash." He did not label it poison, though he knew it was poison. He did not ask what it was for, nor did the young man say It was not a scheduled poison.

The Coroner quoted the law as to scheduled poisons, and added that Section 17 of the Pharmacy Act required all persons selling those poisons, whether wholesale or retail, to label the same distinctly—"Poison." Witness had therefore not complied with the Act of Parliament.*

By Mr. Latham: He was quite sure he wrote "Bichromate of Potash" on the wrapper.

Dr. Howie said that he was called to see Mrs. Butler on Thursday night. He was told that she had taken a dose of tincture of colchicum and bicarbonate of potash, but these were harmless remedies. He did not visit the patient at once, but sent a bottle of medicine. He called the next morning, found her livid, her pulse was flagging, and she was in a state of collapse. He saw symptoms of poisoning, and asked what she had taken. He was shown a quantity of bichromate of potassium, which was a deadly poison. He did what he could to relieve the inflammation, but the case was a hopeless one. The woman died the same day from asphyxia and paralysis of the brain, due to poison. Usually bichromate of potassium would produce death in about four hours.

The Coroner commented upon the conflict of evidence between Wilkinson and Micklewright, and said the latter appeared to have a very hazy notion of the date when he had served this poison. He should most certainly have labelled the poison, and then probably the husband would have hesitated as to allowing his wife to take it.

The jury returned a verdict of "Death from misadventure," and the coroner said he should lay the case before the Pharmaceutical Society.

Mr. Booth said he should do the same.

OBITUARY.

Place.—On December 7, Mary Ann, wife of James Ashworth Place, Chemist and Druggist, Market Place, Pickering, Yorkshire, and mother of Edward B. Place, A.P.S., Dispensing Chemist, 417, Moseley Road, Birmingham. Aged 58 years.

Hackett.—On December 7, Thomas Hackett, Chemist and Druggist, of Birkdale. Aged 69.

Healey.—On December 8, Thomas Healey, Chemist and Druggist, of Hull.

Black.—On December 8, James Hall Black, Chemist and Druggist, of Moffat, N.B. Aged 55.

Jarvis.—On December 9, John S. Jarvis, Chemist and Druggist, at 45, Taunton Road, Lee. Mr. Jarvis was for many years dispenser to Dr. Burroughs, of Lee.

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* This is a mistake. Potassium bichromate is not a scheduled poison. [Editor, *Pharm. Journ.*]

CORRESPONDENCE.

A Christmas Appeal for the Benevolent Fund.

Sir and Brother Pharmacists,—I overheard in our Society House the other day that this Fund is getting very short of cash. As this is Christmas time, when all should be charitable, and when so many of our poorer brethren are making appeals at the portals of Bloomsbury Square for assistance, I venture to ask every man connected with the trade (independent of his annual subscription) to send a trifle to 17, Bloomsbury Square to assist this valuable Fund. Do not say you cannot afford it; remember (as things are now) you may be solvent to-day, but not so to-morrow. No man knoweth what hangs over his head. Fancy yourself some day in your old age going to the Square, saying, "Pity the troubles of a poor old chemist, whose trembling limbs have borne him to this door."

Pity—pity—give me relief,
That Heaven may bless your store.

And imagine Mr. Bremridge answering, "We have no store from which we can relieve you." Now, gentlemen, I ask you to take this to heart, and before you lay this Journal down, post a trifle to Mr. Bremridge, at the Square. If you feel that things are so bad, debar yourself of a few glasses of ale, grog, or a few cigars, and remit the amount so saved. I head this collection with five shillings.

London, December 10, 1896. Henry Wiggins,
Divisional Secretary.

A Danger in Hospital Dispensing.

Sir,—I should indeed be sorry to hear that such a practice as that reported to have been adopted at the Monsall Fever Hospital should be either the rule or the exception, in any of our London institutions or elsewhere. That it is necessary to have concentrated solutions and combinations in the dispensary does not admit of any doubt; but to supply the same to the wards to be dealt with by irresponsible hands is another matter altogether, the practice of which cannot be too severely condemned. Many of us who are engaged in hospitals know how little reliance is to be placed in untrained and inexperienced attendants, and how likely they may be to mistake instructions; it is therefore all the more needful to exercise every precaution to avoid accidents. Such a contingency would be very far from remote were the Monsall use general, and I feel sure of corroboration when I say that no London dispenser would willingly sanction it, knowing the danger that would ensue.

City of London Hospital for Diseases of the Chest, Victoria Park, E.
December 12, 1896. Wm. Harvey.

The North British Board of Examiners.

Sir,—I can sympathise with "Too Young" in his letter published last week. I also have kept myself posted up since passing the Major, and have worked hard for the cause of pharmacy in my town, but without having any chance of recognition. Mr. Kermath says all will be remedied in time, thus admitting there is a cause for grumbling. He also deplores the meagre membership of the Society. Can he not see that the Executive of the North British Branch of the Society by its present policy is doing its best to keep down the membership by discouraging the very class of men who could impart new life into the Society? One could easily fill a column of your valuable space narrating the particular hobbies of examiners, and the tendency of old examiners to get into grooves and ruts. We do not want specialists as examiners, and that is why I hold that young men are better on the Board than the older school; their knowledge is more up to date and general, and they are more able to take candidates over the requirements of the syllabus. We have plenty of talent amongst our numbers, if we wish to retain it. Give it encouragement or else it may betake itself to more congenial quarters.

December 14, 1896. Natu Minimus (71/36).

*** Several paragraphs have been excised from the foregoing letter, as the personal character of the criticism would require the publication of the writer's name.—[Editor, *Pharm. Journ.*]

The Drying of Quinine.

Sir,—On reading in your last issue the account of the recent Evening Meeting in London, I notice that a question was raised as to the time required to dry the alkaloid quinine in a water oven kept at a boiling temperature. Mr. D. L. Howard stated that he never liked to allow less than twenty-four hours with the temperature at 100° C. to 103° C. Presumably he was speaking of drying the alkaloid in bulk, for in my experience, working on the small amounts obtained in B.P. determinations and using a dish with a flat bottom for the operation, I generally find dessication complete in two hours. The same remark applies to the mixed alkaloid obtained in the assay of galenical preparations of cinchona. If spread in a thin film over the surface of the dish it soon dries, but if allowed to settle into a compact fused mass, naturally a much longer time is required for dessication. As the matter is of some importance in connection with the forthcoming revision of the British Pharmacopœia, I shall shortly publish a number of figures bearing on the subject.

Uckfield, December 15, 1896. E. H. Farr.

Sir,—In the course of a somewhat foggy discussion that took place on Mr. Howard's paper last Tuesday, Dr. Attfield is reported to have said "that there was a little practical difficulty in the way of many retail pharmacists, for whose use the Pharmacopœia was undoubtedly primarily intended. *Few such men were able to dry the alkaloid at the temperature of 105° to 110° C.*, which was desirable if the precipitate were to be weighed in a definite condition." The relevancy of the Doctor's remark either to the official method of testing quinine sulphate or to the matter of Mr. Howard's paper is not apparent; but without saying anything more on that point, I wish to protest against the imputation of incapacity of pharmacists to perform a very simple operation conveyed in the words italicised in the above quotation from your report. That such a charge should have been made against the pharmacists of this country by one who has been for more than thirty years engaged in teaching them practical chemistry is, to say the least, amazing!

December 14, 1896. Pharmaceutical Chemist (72/13).

Arsenical Soap.

Sir,—To-day at the Brentford Police Court Mr. Turner, chemist, of Chiswick, was summoned under the Food and Drugs Act for selling Dr. Mackenzie's arsenical soap. Through my solicitors, I instructed Counsel to appear on his behalf, and in the result the summons was immediately dismissed. Might I ask all your readers (through your valuable Journal) who have Dr. Mackenzie's arsenical soap in stock to let me know the quantity, and I will send them special labels to affix to each tablet, which will thoroughly protect them in future from any prosecution or annoyance, or if they prefer, they can obtain the labels through the wholesale houses.

5, *Denman Street, London Bridge, S.E.* S. Harvey,
December 12, 1896. *Proprietor of Dr. Mackenzie's Arsenical Soap.*

Morality or Expediency?

Sir,—In reply to your correspondent "Red Dragon," no one expects, or for that matter wants, a beef steak to be put into their mouth by the Society while they have the bone (the bone of contention) from which very few scraps of comfort can be obtained to drive dull care away.

What is wanted of the Society is fair treatment on all sides, and while they take the monies from the willing and loyal subscribers, and even the few students who subscribe, they ought to give them something more than the Journal (which seems to be the only bone), and to this end the Council would do well to insert in their Bye-laws that everyone on the Register should pay an annual subscription.

Had the Society from its commencement carried out in its entirety the provisions of the Pharmacy Act they should have prevented the manufacture of proprietary articles containing scheduled poisons under cover of the patent medicine stamp, and thus saved themselves the costly litigation they now engage in, which is borne by the few subscribing members and associates.

The Society in the past should have had the power of control of those who had passed the qualifying examination, or were registered under the Pharmacy Act of a previous date, and were allowed to go into business, to see that they were licensed to do so, and in all sales and transfers of businesses they should be apprised of the

fact, thus ensuring that no business is being carried on but under qualified management.

The taking of apprentices and their subsequent training is what the Society ought to carry out, since it is willing to accept the fee of 10*s.* 6*d.* annually from those who have passed the Preliminary to register them as students of the Society. What share of the education grant does the Society ask to establish technical schools for instruction in pharmacy, and have they no one capable of teaching? As it is, the only honour attached to being a student of the Society is the privilege of paying 10*s.* 6*d.* per annum, and receiving the Journal every week.

To put an end to the evasions of the Pharmacy Act by the unqualified trader, the Society ought to regulate and control the conduct of any so-called chemist's business by the system of license; each person trading on his own account and paying his annual subscription being a licensee, and every qualified assistant in the employ of such licensee should have a licence granted him so as to show the Local Secretary of the division where he may be engaged that he is recognised by the Pharmaceutical Society. All changes of situation or transfer of business the Society should be made aware of.

Before the consideration of the appointment of local secretaries and their duties, etc., it would be well to consider how best to carry out the powers of the Act of 1868, and prevent the manufacture and sale of proprietary articles containing scheduled poisons, and to prevent the manufacture of them "under Royal Letters Patent," as one such popular medicine (powders for infants) is known to be mixed and put up by girls in a factory, and to contain scheduled poison.

It is because the Pharmaceutical Society (I take it) is one of the Departments of State and should have control of its officials carrying on service in the public cause, that I write thus, for I am sure that remedying the evils existing within our own ranks will serve the interests of us all more than Parliamentary aid.

Torquay, December 14, 1896. WM. JNO. RAWLING.

MANCHESTER PHARMACEUTICAL ASSOCIATION.

Sir,—In your last issue Mr. G. Wilkinson says that in your article "on an old Manchester pharmacy, the Manchester Chemists' Association is erroneously stated to have been formed in 1868." In reply to this remark may I say that the statement referred to is strictly correct. The "Manchester Chemists' and Druggists' Association" was formed November 6, 1868, from which time down to the present it has had a continuous existence. The title was changed to the "Manchester Pharmaceutical Association" in 1883. This is the Society with which Mr. W. S. Brown was connected so long as Vice-President and President.

In 1842 a branch of the Pharmaceutical Society was arranging for lectures for pharmacy students in Manchester, but this branch was defunct before 1849. The Manchester Conversational Society was originated in 1852, and about the same time the Manchester Chemists' and Druggists' Institute came into existence. These organisations continued to be independent until May, 1855, when a new society, embracing the two older ones, was formed, under the name of the Manchester Pharmaceutical Association. The new body was only in existence about three years. It is certain that from 1859 to 1868 there are no records of any pharmaceutical body existing in this city. Mr. G. Wilkinson may satisfy himself concerning the date of the origin of the Manchester Chemists' and Druggists' Association if he will look up the annual reports, which he will observe are numbered from the year 1868.

December 15, 1896. YOUR CONTRIBUTOR (72/6).

ANSWERS TO QUERIES.

CONSUMPTION OF COCA WINE.—We should say it would be wiser not to accede to such requests. [*Reply to* H. H.—71/14.]

CALENDAR.—Many thanks for your excellent and well-meant suggestion. [*Reply to* W. S. T.—72/1.]

OPIUM ALKALOIDS.—We are unable to assist you further in this matter. [*Reply to* G. W. B.—71/26.]

BOTANICAL SPECIMEN.—It is from the snowberry tree, *Chiococca racemose*, L., Rubiaceæ. [*Reply to* MARE.—71/3.]

PROPRIETARY MEDICINE—On examination of the preparation we find it contains no morphine. [*Reply to* VERB. SAP.—72/14.]

CURE FOR BALDNESS.—Resorcin has been used by Brocq with considerable success in the treatment of baldness. See *Ph. J.* [iv.], iii., 215, where the details of his method are given in full. The treatment requires careful and patient application to obtain good results. Pilocarpine is not a very reliable remedy for baldness. [*Reply to* JUVENIS.—67/35.]

LYSIDIN.—This is a basic compound ($C_4H_8N_2$), the hydrochloride of which is obtained by heating ethylene diamine hydrochloride with sodium acetate. Aqueous solutions have been found useful in the treatment of diseases arising from the secretion of uric acid which is readily dissolved by the dissolved base. Dose: 5 to 15 grains, up to 80 grains per diem, dissolved in carbonated water. [*Reply to* E. B.—70/10.]

LIQUOR MORPHINÆ ACETATIS.—The "strength 1 in 100" is meant to be 1 grain in 100 fluid grains, or 1 part in 100 fluid parts, and this works out very nearly, if the final volume of the preparation be adjusted. It does not mean 1 grain in 100 minims. The official directions for this preparation will probably be more lucidly given in the next Pharmacopœia; they have given rise to a good deal of comment; *vide Ph. J.* [3], xvi., 280, 341, 469, 540, among other references to the subject. [*Reply to* IGNORAMUS.—69/14.]

BOOKS ON URINE ANALYSIS.—In addition to Allen's book, several works may be referred to in special cases. Possibly Dr. Lionel S. Beale's 'One Hundred Urinary Deposits for Practitioners and Students' will be useful for microscopical work. It is published by J. and A. Churchill at five shillings. An exhaustive work on the subject is 'A Guide to the Qualitative and Quantitative Analysis of Urine,' by Neubauer and Vogel, published by W. Wood and Co., New York. Thudichum's 'Treatise on the Pathology of Urine, including a Complete Guide to its Analysis,' is also a standard work. It is published by J. and A. Churchill. [*Reply to* D. M.—67/37.]

TRADE CUSTOM AS TO NOTICE OF DISMISSAL.—In our opinion if the assistant was engaged subject to a condition that his salary should be paid monthly, he has no more right to a three months' notice to quit his apartments, which were part and parcel of his hiring, than he has to demand three months' salary upon his engagement being cancelled. The promise given to him to provide unfurnished apartments was only part and parcel of his hiring, and the fact that he placed his own furniture in his employer's apartments does not in consequence entitle him to any longer possession than that to which his assistantship will entitle him. We know of no 'trade custom" such as is alluded to. [*Reply to* RADIX.—70/31.]

GLUCOSE IN LEATHER.—Leather-sellers apply the following rough tests to leather:—A few strips of the leather are soaked in a small quantity of water for twenty-four hours: if much glucose is present the water will become quite thick and "syrupy." Two pieces of leather dressed with glucose will stick together if wetted and allowed to dry in contact. Leather containing glucose is very difficult to dry, in the air, after it has been moistened. A more definite test is afforded by the copious reduction of Fehling's solution, on boiling with a few drops of the aqueous infusion of the leather, after removing the tannin by precipitation with lead acetate. German leather is sometimes heavily dressed with glucose, as much as 30 or 40 per cent. having been reported as present. [*Reply to* LEATHER.—68/2.]

NEWSPAPERS sent to the Editor should have the paragraphs marked to which it is desired to call attention. Copies have been received during the week of the following:—*Huddersfield Daily Examiner, Liverpool Daily Post, North British Daily Mail, The Evening Citizen, The Weekly Sun, Crewe Guardian, Weston-super-Mare Gazette.*

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Allison, Arnott, Ashton, Averill, Bell, Bennett, Blythe, Bostock, Boyd, Bratley, Calvert, Chalmers, Cockburn, Cornwell, Cox, Crofts, Dennis, Donald, Duncan, Dunn, Fitt, Green, Griffiths, Grimble, Grose, Harvey, Harvie Herrera, Hewlett, Highley, Hill, Howorth, Ingram, Jackson, Kempt-Booth, Kent, Kirkby, Laurie, Lawrence, Maben, Macfarlan, McFadgean, McKellar, McKenzie, Marsden, Nind, Park, Place, Poole, Postlethwaite, Purvis, Rawling, Royle, Sayers, Storrar, Taplin, Turner, Walton, Wardleworth, Wiggins, Williams.

ROYAL COLLEGE OF SURGEONS 24 DEC 96

"THE MONTH."

Lucium not an Element.

The alleged new element, "lucium" (see *ante*, p. 290), is shown by W. Crookes to be nothing but impure yttrium. He obtained a solution of the so-called "lucium nitrate" from P. Barrière, the patentee of lucium, and a quantity of precipitated oxalate, both said to be tolerably pure. Preliminary examination with a hand spectroscope showed the presence of didymium and erbium in small quantities, and both the oxalate and the solution yielded a cream-coloured earth on ignition. When radiant matter tests of this and the original earth were performed, the yttrium phosphorescent spectrum was exhibited, and photographs of the ultra-violet spectrum of "lucium" also showed a close resemblance to those of "yttrium," only six lines in the former being unaccounted for. Of these four were extremely faint, and were attributed to platinum or air, the fifth was due to a trace of zirconium, and the sixth coincident with a strong line in the ytterbium spectrum. Spectrum analysis on two different lines having thus indicated the so-called "lucia" to be nothing more than impure yttria, chemical examination was resorted to and afforded confirmation of this view. The fact that the atomic weight of "lucium" appeared to be 104, whereas that of yttrium is 89, is accounted for by the presence of didymium and erbium, both of which have very high atomic weights.—*Chemical News*, lxxiv., 259.

The Röntgen Rays.

Dr. T. L. Phipson follows up his suggestion that X rays exist in sunlight (see last vol. p. 412) by a number of assertions, which he is pleased to dignify as an "Explanation of the Röntgen Rays." The rays are alleged to exist in the "lower" part of the spectrum, sunlight passing through a "prism of organic matter" being split up into heat rays (ultra-red), light rays (colour), and electric rays (ultra-violet, actinic, or X rays). The rays are said to traverse all organic substances, whilst being more or less arrested by mineral substances, because all the latter contain a metal, and metals being good conductors "they run over (*sic*) the metal." Further, they are said to discharge electrified bodies because they are electric rays and supply the "contrary electricity," whilst they act on the photographic plate "as a galvanic current acts on salts." As might be expected, no evidence is offered in support of these curious statements, and they are only of interest as showing what may be published in scientific journals.—*Chemical News*, lxxiv., 260.

New Rays.

There are now at least six kinds of new rays before the public, assuming the X rays to be one kind only. First come the kathode rays, existing inside an exhausted bulb placed in the path of an electric discharge, and demonstrated long ago by Crookes, Hittorf, and others. Then we have Lenard's rays, which are kathode rays that have escaped from a bulb by means of an aluminium window. These rays are sensitive to magnetic action, and can be deflected by a magnet. They will also act on a photographic plate through many opaque substances. Röntgen rays exist in combination with Lenard's rays, but are not deflectable by a magnet, and possess more pronounced powers of "photographing the invisible." The *rayons uraniques* or phosphorescent rays discovered by H. Becquerel are given off by uranium and its salts, and are also capable of acting on a photographic plate. These rays were independently discovered by Professor Sylvanus P. Thompson, and differ from Röntgen rays, as they can be both refracted and polarised. Then come the glowworm's rays, which have recently been shown by Mr. Dawson Turner and by a Japanese investigator to have a faint photographic action through aluminium and through copper. Finally there are the rays emitted by phosphorus, which will penetrate black paper, but not aluminium. There are still possibilities of other undiscovered rays existing within the compass of the Crookes tube, Professor Thompson having shown that during the course of exhausting a bulb, before the Röntgen rays make their appearance, some other rays appear which differ from the kathode or Lenard rays, inasmuch as they are electrostatically as well as magnetically sensitive. Work on rays is therefore likely to be common.—*Academy*, 1285, 569.

Ozone and Phosphorescence

Whilst investigating the properties of ozone, M. Otto was led to the conclusion that the luminosity produced when ozone and water are in contact is due to the presence in the water of organic matters of animal or vegetable origin. He is also of opinion that most organic matters are capable of giving rise to the phenomena of phosphorescence, in the presence of ozone.—*Comp. rend.*, cxxiii., 1005.

Creso-magnesol.

A new pharmaceutical method for "exhibiting" creosote has been devised by Romeyer and Testevin which presents many advantages in preparing that substance in the form of pills. Creso-magnesol is prepared as follows:—Twenty parts of caustic potash are dissolved in 10 parts of water in a porcelain mortar. To this are gradually added and emulsified 800 parts of beech creosote, and finally 170 parts of freshly-calcined magnesia are worked in. The mass left at ordinary temperatures gradually deepens in colour, and at the end of thirty-six hours is of good pilular consistence. Later it sets, so that it may be readily powdered, and in this powdered form is easily massed into pills with a little honey. This powder contains 80 per cent. of creosote; a convenient pill is one containing 10 centigrammes of creso-magnesol. With pure guaiacol, using only 10 per cent. of magnesia and potash together, a pulverulent mass is speedily obtained, which contains 90 per cent. of guaiacol.—*L'Union Pharmaceut.*, xxxvii., 489.

French Otto of Rose.

J. Dupont and J. Guerlain show that French otto of rose contains an ether which is saponified by prolonged ebullition with water, owing to which fact probably it cannot be detected in the Turkish oil. E. Charabot and G. Chiris also claim to have discovered an acid in rose water, which they assume to be produced by saponification of an ether existing in otto of rose. The amount of acid detected was equivalent to 0·0003 Gm. of acetic acid per litre, or to the saponification of 0·00098 Gm. of ether per litre of water distilled. It is suggested that the destruction of this ether during the distillation of Turkish roses probably accounts for the greater softness of Turkish as compared with French otto of rose.—*Comp. rend*, cxxiii., 700 and 752.

Proteacin.

The botanical source of the active principle described under this name, proteacin, being somewhat doubtful (*Pharm. Journ.* [3], xvii., 327, 408), Mr. E. M. Holmes has obtained from Mr. J. Meiring specimens of the plant from which the proteacin was originally prepared. The plant on examination proved to be *Leucadendron decurrens*, R.Br., a species with lanceolate, spathulate, sub-decurrent and glabrous leaves, with the calyx of the male flowers wholly glabrous, and that of the female flowers with a hairy tube and a glabrous limb. In *L. concinnum*, R.B., to which the plant is attributed by Merck (*Ph. J.* [4], ii., p. 426), the leaves are lanceolate oblong and the calyces hairy, and the twigs hairy near the apex. The leaves also are only about half the width of those of *Leucadendron decurrens*.

Tephrosia Macropoda. Some months since a specimen of a root, said to have caused the apparent death of a Zulu on drinking its decoction, was forwarded to the Museum of the Society. It proves on examination to be that of *Tephrosia macropoda*, a well-known fish poison. Its action was investigated by Professor Dr. Plugge, who found that it contained an active principle which possessed the properties of a heart poison, but which was not an alkaloid nor was it identical with cytisin, the poisonous principle already detected in many Leguminous poisonous plants.

Alumnol Bougies. Alumnol, 25 centigrammes; rice starch, 2 grammes; sugar, 3 grammes; glycerin ointment, 50 centigrammes; mucilage of acacia, 3 drops; distilled water, 8 drops. Ft. bugin. x *scc. art.*—*Nouv. Rem.*, xii., 678, after *Ph. Cent.*

Improved Syrup of Tolu. In a paper criticising the process for making this syrup at present given in the Belgian Pharmacopœia, Hendrix brings forward a method which is suggestive to British pharmacists. He takes 10 parts of balsam of tolu and puts it in a still with 150 parts of water, and distils one-third; he then removes the still head, continues heating for a few minutes with constant stirring, so as to bring all the melted balsam into contact with the water, and then filters while hot. This filtrate is mixed with the distillate, and 260 parts of sugar added, the final weight being adjusted to 400 parts.—*Annales de Pharm.*, ii., 473.

Asbestos Surgical Dressings. It is suggested that asbestos may afford a useful fabric for surgical dressings, from the ease with which it may be thoroughly and quickly disinfected. No matter how saturated it may be with septic matter, it may be rendered absolutely aseptic after washing by heating for a few minutes on a bright fire. Kane, who advocates the use of this dressing, points out that its use does away with the necessity of packing and carrying in the sterile condition, since it can be rendered absolutely sterile immediately before use. The fibre employed is as soft as floss silk, and, when woven into a fabric, is more absorbent than cotton.—*Brit. Journ. Dental Science*, 1045, xxxix., after *Medical Record.*

Syrup of Mulberries. The following method, according to Hendrix, gives an excellent syrup of mulberries, preferable to that at present official in the Belgian Pharmacopœia, which, the author states, occasions a great waste of sugar, and is very apt to become viscous. The weighed mulberries are placed in a dish and gently heated, with constant stirring. When the juice commences to boil the vessel is removed from the source of heat, and the juice strained. To the clear juice sugar is added in the proportion of 19 parts of sugar to 16 of mulberries. The usual process is then followed, the final product being adjusted to a density of 1·34. It may be suggested that it would seem preferable to give the ratio of sugar to the clear juice rather than to the weight of entire fruits, since mulberries do not invariably yield the same quantity of juice.—*Annales de Pharm.*, ii., 472.

Bitterless Cascara. L. C. Urban obtains a palatable and aromatic fluid extract of cascara, possessing marked cathartic properties, by thoroughly mixing freshly slaked lime, 100 Gm., with ground cascara sagrada bark, 1000 Gm., and ground liquorice root, 150 Gm., then kneading the mixture with water, 1000 C.c. Macerate for ten or twelve hours, and then dry at 40° to 50° C. Next moisten with 400 C.c. of a menstruum composed of alcohol, 500 C.c., glycerin, 250 C.c., water, 250 C.c., pac a percolator and exhaust with the same menstruum. Reserve the first 850 C.c. of the percolate, and evaporate the rest to a syrupy consistence. Add this to the reserved portion, together with 12 C.c. of compound spirit of orange, and make up with dilute alcohol to 1000 C.c.—*Pharm. Rev.*, xiv., 270.

Glycerite of Liquorice. This is a preparation devised by J. W. England to mask the taste of bitter and nauseous drugs given in the liquid form, in place of the various extracts of liquorice in general use. He claims that a satisfactory liquid preparation of liquorice should contain in solution all the desirable proximate principles, free from acrid resin or other objectionable substances. Moreover, it should be of full odour and taste, and standardised to a definite strength. The following formula is offered as meeting all those requirements:—Take of powdered extract of liquorice, 8 troy ounces; water, 32 fluid ounces; ammonia water, 1 fluid ounce; and glycerin, a sufficient quantity. The extract is sifted upon the surface of the water and the ammonia solution contained in a capacious vessel, and after solution is completed as far as possible, the mixture is poured upon a specially prepared sand-bed in a half-gallon glass funnel. This is prepared by passing fairly coarse washed sand through a No. 20 sieve, washing thoroughly with boiling water, and heating strongly until dry. A flat piece of absorbent cotton, wetted on the under side, is placed in the bottom of the funnel and sand then poured in to within an inch or two of the top. After the percolate begins to come through bright, the process is allowed to proceed, and water added as required until all the soluble matter in the sand-bed has been washed out. The percolate is then evaporated to three-fourths of the bulk required to make it a 50 per cent. solution by volume, and glycerin added to make up the bulk. The resulting product is a black, syrupy liquid, having the characteristic odour and taste of pure liquorice, and syrup of liquorice may be readily prepared from it by adding one volume to three of syrup. The sand-bed used in preparing the glycerite may be used more than once.—*Amer. Journ. Pharm.*, lxviii., 663.

Convenient Drying Box. T. S. Wiegand describes a convenient drying box for desiccating substances in larger quantities than can be done in the ordinary glass desiccators. A box is obtained of convenient size and made of good, sound planed boards, free from loose knots or cracks. The joints should be well closed, the lid fitted tightly, and the edges be lipped with soft leather or sheet rubber. Paste paper on the inside of the box and place in it a tray to contain freshly burnt lime. The substances to be dried are placed on wire frames, which rest upon cleats fixed upon the sides of the box at convenient distances apart, and when closed the case is fastened with hooks of such a character that the closer they are pressed to their supporting pins, the tighter they draw the lid down. It is claimed that by means of this box, lozenges of a hygroscopic character can be dried in two days' time, whilst tough roots, like gentian and marshmallow, soon become fit for grinding, and chemicals which are affected by moisture are kept in excellent condition. Lastly, leaves containing volatile ingredients, liable to be dissipated by heat, are soon found to be fit for powdering and retain their natural components unaltered.—*Amer. Journ. Pharm.*, lxviii., 666.

Capsicum Oleoresin. As much as nineteen per cent. of oleoresin has been extracted from good capsicums by W. C. Alpers, by extraction with ether, according to the U.S.P. method. The actual yield of oleoresin from five pounds of capsicums was fifteen ounces, and two pounds of ether was consumed in the operation, including a loss by a small accident and a few ounces used to clean the flasks, dishes, etc., after the work was completed.—*Merck's Report*, Nov. 15, 593.

Halogen Compounds of the Proteids. Since the discovery of iodine in the thyroid gland by the late Dr. Baumann, considerable attention has been directed to the halogen compounds of proteids. F. Blum reports (*Münch. Med. Woch.*, 1896, 43, 1099) that in acting upon proteids the halogens replace hydrogen, and that the hydracids so formed are then attached to the proteid molecule until its capacity for acid is saturated. Iodo-albumin was tried in cases of parenchymatose goître, experimental tetanus, and myxœdema; bromo-albumin in cases of epilepsy; chloro-albumin in stomach disorders, and in all instances encouraging results were obtained. Paulmann has also studied the subject chemically, with similar results. He succeeded in obtaining definite pulverulent preparations containing respectively 15 per cent. iodine and 10 per cent. bromine, to which he gives the names "iodosinum" and "bromosinum."—*Apotheker Zeitung*, xi., 906.

Growth of Diatoms. Mr. G. C. Whipple has carried on a series of experiments on the culture of different kinds of diatom, and finds that an abundant food supply is not the only condition favourable for their rapid increase; the temperature, the amount of light, and other factors, influencing their growth. In common with all other chlorophyllaceous plants, diatoms will not grow in the dark, while, on the other hand, bright sunlight also kills them. The intensity of the light below the surface of the water being affected by the colour of the water, diatoms are found most abundantly in light-coloured waters. Different genera, however, exhibit differences in this respect; *Melosira* does not require so much light as *Synedra*. The weather has a marked influence on the growth of diatoms; they increase most rapidly during those seasons of the year when the water is in circulation throughout the vertical. During these periods not only is food most abundant, but the vertical currents keep the diatoms near the surface, where there is light enough to stimulate their growth, and where there is abundance of air. Some species display strong heliotropism, moving towards the source of light.—*Technology Quarterly* (Boston), 1896, p. 145.

Rheotropism. In the *Botanical Gazette* (1896, p. 242), Mr. F. Newcombe gives the result of experiments on the tendency of roots to move in the direction of running water. Out of seventeen species of Monocotyledons and Dicotyledons examined, eight were positively rheotropic—that is, they curved the tips of their roots directly or obliquely against the stream; nine species were indifferent; none were negatively rheotropic. The curvature appears to be in response to irritation.

Absorption and Emission of Water by Seeds. According to experiments made on a variety of seeds by M. H. Coupin, the absorbing power of water in the same kind of seed varies greatly, as also does the extent to which the water penetrates the seed. Dormant seeds absorb, as a rule, as much water as living seeds. The temperature only slightly affects the absorbing power of seeds. Aqueous vapour can be absorbed directly by seeds, especially by the embryo. The bursting of the integument of seeds when they germinate is not due altogether either to the increase in size of the embryo or to the direct force of the germinating radicle; it is probably brought about by a diastase which has the property of disorganising the integument and decreasing its resisting power. When seeds are plunged in water, dilatation takes place, followed by contraction, if the seed has a thin folded integument. The contraction is due to a chemical combination of the reserve materials with water; dilatation to a rapid imbibition by the integument. When ripening, seeds become desiccated by transpiration, not by simple evaporation.—*Ann. des Sci. Nat.* (Bot.), 1896, p. 129.

Embryo Sac of Succulent Plants. In an elaborate paper in the *Annales des Sciences Naturelles* (Bot., vol. ii., 1896, p. 37), M. E. d'Hubert describes the characteristics of the embryo-sac in succulent plants, especially in the Cactaceæ and Mesembryanthemaceæ, which appear to serve as a protection to the growing ovule against excessive transpiration, and to aid in its nourishment. The ovule has two integuments, and the funicle is always strongly developed and serves as a nutritive organ, its cells being loaded with starch or some other carbohydrate; it is coiled round the ovule, and constitutes the aril in *Opuntia*. The embryo is not formed until a comparatively late period. Starch is usually found in the embryo-sac, and plays a very important part in the nutrition of the ovule, the antipodal cells being apparently the active factor in the formation of this starch. The synergids, on the other hand, supply nutrition to the nucleus of the pollen-tube and to the oosperm at the moment of its formation. The ovule of the Crassulaceæ presents the same general features, but is characterised by a great reduction in the size of the nucellus.

Ovule of Parasitic Plants. From some very interesting researches of M. P. van Tieghem, it would appear that the ovule of many parasites, especially of those belonging to the orders Balanophoraceæ and Loranthaceæ, is subject to remarkable reduction. In some genera certain special hypodermal cells of the ovary (endosperm-mother-cells) develop directly into the embryo-sacs, and there is, therefore, a placenta, but there are no ovules. In others, as, for example, in *Balanophora*, the placenta itself, as well as the ovules, is suppressed, the central cell of the ovary becoming directly the mother-cell of the endosperm. In some genera of the two orders named, as well as in a few others, this is accompanied by a peculiar mode of impregnation which the author terms "basigamous," in contrast to the usual "acrogamous" mode. The ordinary position of the "egg-apparatus," or embryonic vesicles, and of the antipodal cells is here reversed, the former being found in the lower, the latter in the upper part of the embryo-sac. This appears to favour the theory that the antipodal cells are embryonic vesicles in which the capacity for impregnation is in abeyance. *Balanophora indica* possesses the smallest known pistil, the ovary measuring 0·20 × 0·15 Mm., the length of the style being 0·4 Mm., and the whole resembling the archegone of a moss.—*Morot's Journ. de Bot.* 1896, p. 245, and *Bull. Soc. Bot. France*, 1896, p. 295.

Importance of the Anatomical Characters of Plants. In a paper published in the *Annales des Sciences Naturelles* (Bot., 1896, p. 1), M. P. Parmentier gives a variety of examples to illustrate the importance of using characters derived from the internal anatomy in determining both the limits of critical species and the position of doubtful genera. Thus it is shown that, on anatomical grounds, *Trapa* must be placed not among the Œnothereæ but among the Haloragеæ; and that the Eupteleæ have no genetic connection with the Magnoliaceæ. The following are given by the author as the most important anatomical characters for systematic purposes. In the leaf:—the general presence or absence of crystals in the epiderm; the form of the cell-walls of the cuticle; a simple or multiple epiderm; the presence or absence of hypoderm; the centric, subcentric, or bifacial structure of the mesophyll; the presence or absence of vesicular reservoirs, of fibres running through the mesophyll, and of sclerified cells; and the mode of increase and localisation of these cells. In the stem:—the general plan of the vascular bundles; the presence or absence of periderm, of mechanical fibres, of sclerified cells, and of crystals,

and the localisation of these various elements; the form and orientation of the cells of the conjunctive parenchyme, etc.

Birds and Seeds. The popular idea that many plant seeds—such as those of the mistletoe—pass unharmed through the digestive canal of birds and, being voided with the excrements, reach the ground in a peculiarly favourable condition for germination, is shown by F. W. Keeble to be not universally the case with the Loranthaceæ. The seeds of the Cingalese species of *Loranthus* are freely eaten by a honey bird, a species of *Nectarinia*, which is an effective agent in the pollination of those plants, and investigation has proved that the seeds, if swallowed, are digested and destroyed.—*Proc. Linnean Soc.*, through *Nature*, lv., 109.

The Glacial Epoch. Another probable cause of the Glacial Epoch is suggested by Professor Edward Hull, who deals with the effects that would be produced upon the Gulf Stream by the uprising of a submerged Antillean continent, and maintains that the current would thereby be compelled to flow directly northwards into the North Atlantic, and be deprived of about ten degrees of heat. The increased snowfall that would thus be caused over certain areas would tend to intensify the cold through all the adjoining tracts, and at the same time the glaciation caused would be intensified by the elevation of the land of Eastern North America, and to an elevation of North-western Europe, which is supposed to have occurred at the end of Pliocene times.—*Proc. Geol. Soc.*, 665,16.

Poisoning by Areca Nut. Dr. E. H. Cook records a case of dog poisoning by powdered areca nut. A teaspoonful was mixed with half a teacupful of castor oil, and divided amongst four Dachshund puppies. In less than five minutes they experienced great difficulty in breathing, coughed slightly, and fell down on one side. An emetic of salt and water had the desired effect in two cases, but the other two puppies gradually got weaker and died in ten minutes. A third dog died five hours later, in spite of the succe s-ful administration of the emetic. An alkaloidal substance was subsequently found in the dogs' stomachs, but in too small quantity to ascertain whether or not it was arecoline. No other injurious substance could be detected.—*Chemical News*, lxxiv., 295.

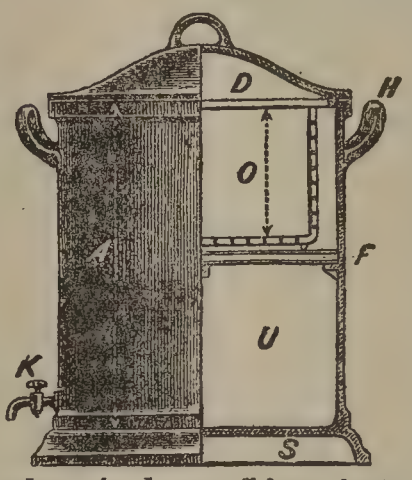
Jumping Beans. M. Yeatman Woolf, writing to the *Pall Mall Gazette*, says he has had experiments in hand with the so-called "jumping beans" for the last two years, and he finds that the apparent leaps are an illusion due to the eccentric shape of the beans, and the character of certain of the complicated movements thereby rendered possible. In support of his contention he mentions that, after carefully removing the woody fibre of some beans so as to leave intact the silken bags containing the live maggots, the beans, despite the decrease of weight, although they still continued to move, did not appear to lift themselves at all from the sheet of blackened glass upon which they lay. He claims to have been able to thoroughly clear up the cause of the motive power by keeping many maggots in artificial wax houses with windows inserted. When the grub has covered up an aperture with its silk it afterwards darkens the same with juices formed out of the excreta, until it assumes a brownish colour. In one instance a bean was found to contain a parasite (ichneumon) tucked up alongside the cocoon, but dead. From the fact of the interior of the bean having a silk lining similar to all those containing maggots and from the excreta, it is presumed that the ichneumon parasite had eaten the caterpillar.

NEW IDEAS.

NEW POWDER-MEASURE.

An ingenious powder-measure has been devised, and is sold by KEYL, of Dresden. It consists of a metal spoon with a long, narrow bowl, the capacity of which can be regulated by sliding a metal stop backwards or forwards. This stop passes over a scale near the handle of the spoon, and can be fixed at any point by a screw. A small slip of steel passes over the bowl, returning to its original position by a spring. Having been adjusted for the quantity required, the spoon is dipped into the powder, the excess removed by the steel slip, and the measured powder tapped from the bowl on to the paper. The apparatus appeared to answer better for such drugs as antipyrin than for those that have a tendency to agglomerate, as, for instance, powdered rhubarb.

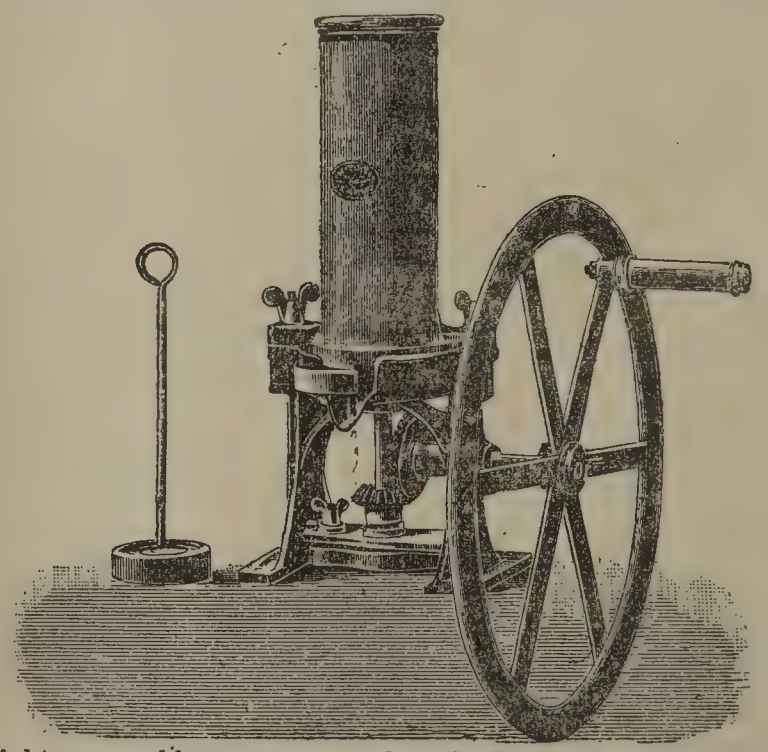
SYRUP MAKER AND FILTER.



For the automatic preparation and filtration of large quantities of simple syrup by a cold process, KOPP, of Strasburg, recommends his cylindrical filter. The apparatus, which is constructed of enamelled iron, consists of an upper container, with perforated sides and bottom, a filtering medium, F, and a receiver, U. The upper container is filled with sugar; into the lower water is introduced until it reaches the sugar. Solution at once commences, and the syrup formed falls to the bottom of U, passing through the filter F in its course, and can be drawn off from the tap, K, as soon as the correct density has been reached. Fresh sugar and more water can be introduced into O and U respectively, as required.

OINTMENT MILL.

At the recent exhibition of pharmaceutical apparatus in Dresden, Messrs. LIEBAU, of Chemnitz, exhibited an ointment mill, which appeared to meet with the approval of many German pharmacists. The working of the apparatus will be intelligible from the illustration. The ointment is fed into the tall cylinder and pressed by



weights over a blunt cone on to the grinding surface. As it issues from the mill it is scraped off by the scraper and delivered from the spout into a vessel placed to receive it.

THE DAVY FARADAY RESEARCH LABORATORY OF THE ROYAL INSTITUTION.

OPENING OF THE NEW PREMISES.

INTRODUCTORY.

SCIENCE has never lacked disinterested followers in Great Britain and Ireland, and the lengthy list of patient and successful investigators hailing from the three kingdoms is probably but preliminary to a mighty roll of distinguished names that will unfurl itself as ages roll on. Davy and Faraday, whose portraits are here presented to our readers, were remarkable instances of men whose labours in the cause of science have proved of inestimable value, and yet narrowly escaped being lost to the world for lack of favourable opportunities. In each instance, however, the opportunity came and found the individual ready, with the result that civilisation was appreciably advanced and the world so much improved as a place of human existence. In how many cases the opportunity has failed to come it is impossible to say, but there should be general agreement upon one point—that, if possible, no one capable of adding to the sum of human knowledge should lack a favourable opportunity of manifesting his ability in the future. Moreover, it should be recognised that though agreement as to the desirability of an object is good, such agreement alone will not suffice to effect the object. Pious opinions are all very well in their way, but action, following unanimity of opinion, is requisite to bring about the desired result.

HUMPHRY DAVY.

MICHAEL FARADAY.

Christmas, 1896, will ever be noted for its association with the successful efforts of one individual to realise an idea that has long been familiar to many, and to place within the reach of those who might otherwise lack favourable opportunities of proving their capabilities, the means of taking part in the forward march of science. Thanks to Dr. Ludwig Mond, F.R.S., London at last possesses a thoroughly-equipped laboratory in which chemical and physical research may be prosecuted free of cost to workers. The need of free research laboratories in this country has long been recognised, but up to the time when the first intimation of Dr. Mond's magnificent gift was published, a little over two years ago, the prospect of such being founded and properly endowed appeared slight in the extreme. Now, however, the idea has become realised, and henceforth London will be free from the reproach that, with all its vastness and riches, it contained no place where advanced workers in science could freely pursue their investigations unchecked by pecuniary considerations. Considering the extent and wealth of the British Empire, the event celebrated this week may not appear to justify the enthusiasm aroused, but if the opening of the Davy Faraday Laboratory be regarded only as the beginning of a new era in the history of British Science, and as the outcome of the generosity of one man who has proved what enormous benefits may accrue from the application of science in practice, the cause for satisfaction remains very great. Regarded in this light, the formal inauguration of the new Laboratory on Tuesday, December 22, fitly renders that a red-letter day in the history of British science.

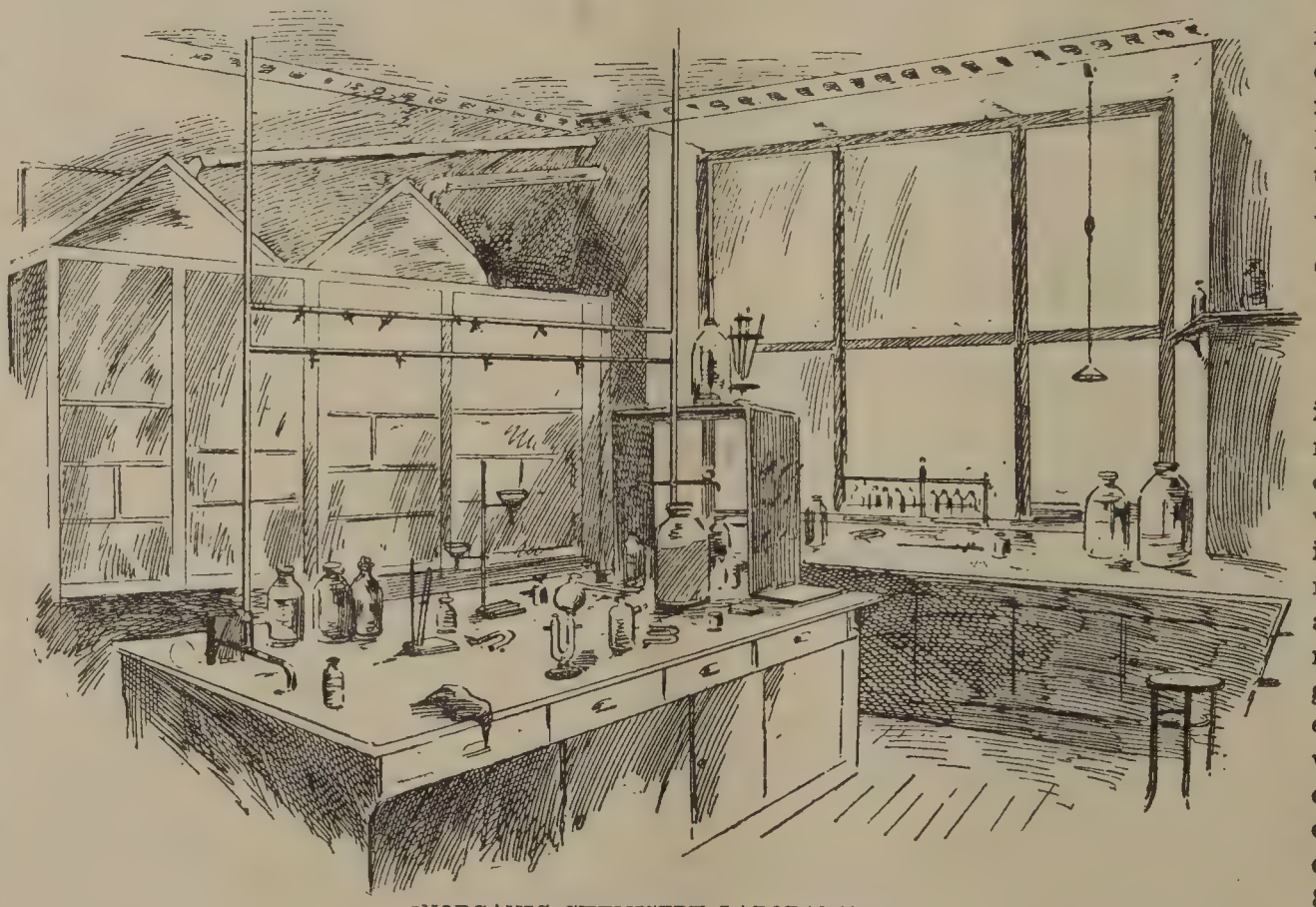
It seems quite in accordance with the fitness of things that this new project should be closely associated with the Royal Institution of Great Britain, for the history of the Royal Institution is the history of experimental science during the nineteenth century. Founded by Rumford in 1799, for the purpose of teaching the application of science to the useful purposes of life, the original plan was greatly altered and extended soon after the appointment of Humphry Davy as director of the laboratory, and subsequently as professor of chemistry, the objects of the Institution becoming much the same as at present. As now defined, these are: (1) to promote scientific and literary research; (2) to teach the principles of inductive and of experimental science; (3) to exhibit the application of these principles to the arts; and (4) to afford opportunities for study. How well those objects have been attained is matter of common knowledge, and it is unnecessary to refer to the matter in detail at present. It may not be out of place, however, to point out that in the laboratories of the Royal Institution have been conducted the world-famous researches of Young, Davy, Brande, Faraday,

Tyndall, Frankland, Odling, Gladstone, Dewar, and Rayleigh than which no better scientific work is ever likely to be done. The subjects of investigation have included the following, quoted from the prospectus of the Institution:—Photographic Action—the Laws of Electro-Chemical Decomposition—Electrolysis—the Decomposition of the Fixed Alkalies—the Establishment of the Nature of Chlorine—the Philosophy of Flame—the Condensability of Gases—the Science of Magneto-Electricity—the Magnetic and Diamagnetic Properties of Matter—the Relation of Magnetism and Light—the Physical Effects of Pressure on Diamagnetic Action—the Absorption of Heat by Gases and Vapours—the Transparency and Opacity of our Atmosphere—Sound—Capillarity and Surface Tension—Organic Synthesis—Spectrum Analysis—Chemistry of the Electric Arc—Liquid Oxygen and its Magnetic Properties—Liquid Atmospheric Air—and the Properties of Matter near the Zero of Absolute Temperature.

ORGANIC CHEMISTRY LABORATORY.

As is also pointed out in the prospectus, the demands of modern scientific research and the demonstration of the results in the Lecture-room, on the extensive scale to which the Members of the Royal Institution have been accustomed, involve the provision of most complicated and costly apparatus, and also a large and continual expense in working this apparatus when provided. It is therefore rightly claimed to be to the great credit of the Members that up to the present time all those expenses have been defrayed by contributions from themselves and others who appreciate the value of the work that has been done, and that the above-mentioned valuable scientific discoveries have thus been made without support or subvention from the State.

But whilst science has been materially advanced through the continued efforts made to keep the Royal Institution in the forefront of the scientific world, the space available for laboratories has been too limited to permit of more than the promotion of chemical and physical science by acknowledged masters in those department of knowledge. On this account, a scheme that commended itself to Brande and Faraday—the establishment of a school for instruction and research in chemistry, at the Royal Institution—could not be carried into effect, and though such schools have since sprung into existence, no adequate provision had been made for carrying on systematic research work in this country, as was pointed out two years ago by a writer in the *Times*, when referring to the acceptance by the managers of the Royal Institution of Dr. Mond's offer.



INORGANIC CHEMISTRY LABORATORY.

The Extent of Dr. Mond's Gift.

This offer was intended to remove the difficulties in the way of prosecuting systematic research work, and its extent may best be gathered by quoting the words of the conveyance and deed of trust, executed on June 8, 1896. In this Dr. Ludwig Mond conveyed to the members of the Royal Institution—

All that freehold messuage or dwelling-house known as No. 20, Albemarle Street, in the Parish of St. George, Hanover Square, in the County of London

. . . . And also all and singular the furniture, apparatus, appliances, and other chattels now in or about the said messuage and premises. To have and to hold . . . . upon trust that the Royal Institution shall establish in the said messuage, No. 20, Albemarle Street, and shall at all times thereafter maintain, conduct, manage, and carry on therein, with and subject to the powers, declarations and provisions hereinafter contained, a laboratory, to be called "The Davy-Faraday Research Laboratory of the Royal Institution," the object of which shall be to promote, by original research, the development and extension of chemical and physical science.

But in addition to providing a most convenient place for carrying on the work, immediately adjoining the premises of the Royal Institution, provision was made at the same time for endowing the new Laboratory amply, no likely contingency being overlooked, as witness the subsequent terms in which this princely gift and its objects are referred to:—

The said Ludwig Mond doth hereby covenant with the Royal Institution that he . . . . will, within thirty years after the date of these presents, pay to the Royal Institution the sum of £62,000, and . . . . . that the interest, dividends and other the yearly income arising from the said sum of £62,000, and the investments thereof for the time being shall be from time to time paid to the Royal Institution in trust, that the same shall be applied by the Committee of Managers in or towards the expense of maintaining the said messuage, No. 20, Albemarle Street, in good repair and condition, and in payment of the rates and taxes, if any, payable in respect of the said messuage, and in or towards payment of the salaries of the Director or Directors, assistants and other attendants and servants, if any, employed in or about the laboratory, and in providing a sufficient supply of gas, water and electricity for use in the said messuage, No. 20, Albemarle Street, and in, from time to time, providing and maintaining scientific apparatus, chemicals, and other appliances and things for use in the laboratory, and in payment of such other expenses incident to or connected with the occupation of the said messuage for the purposes aforesaid, and the maintaining, conducting and carrying on of the laboratory as the Committee of Managers shall from time to time think fit.

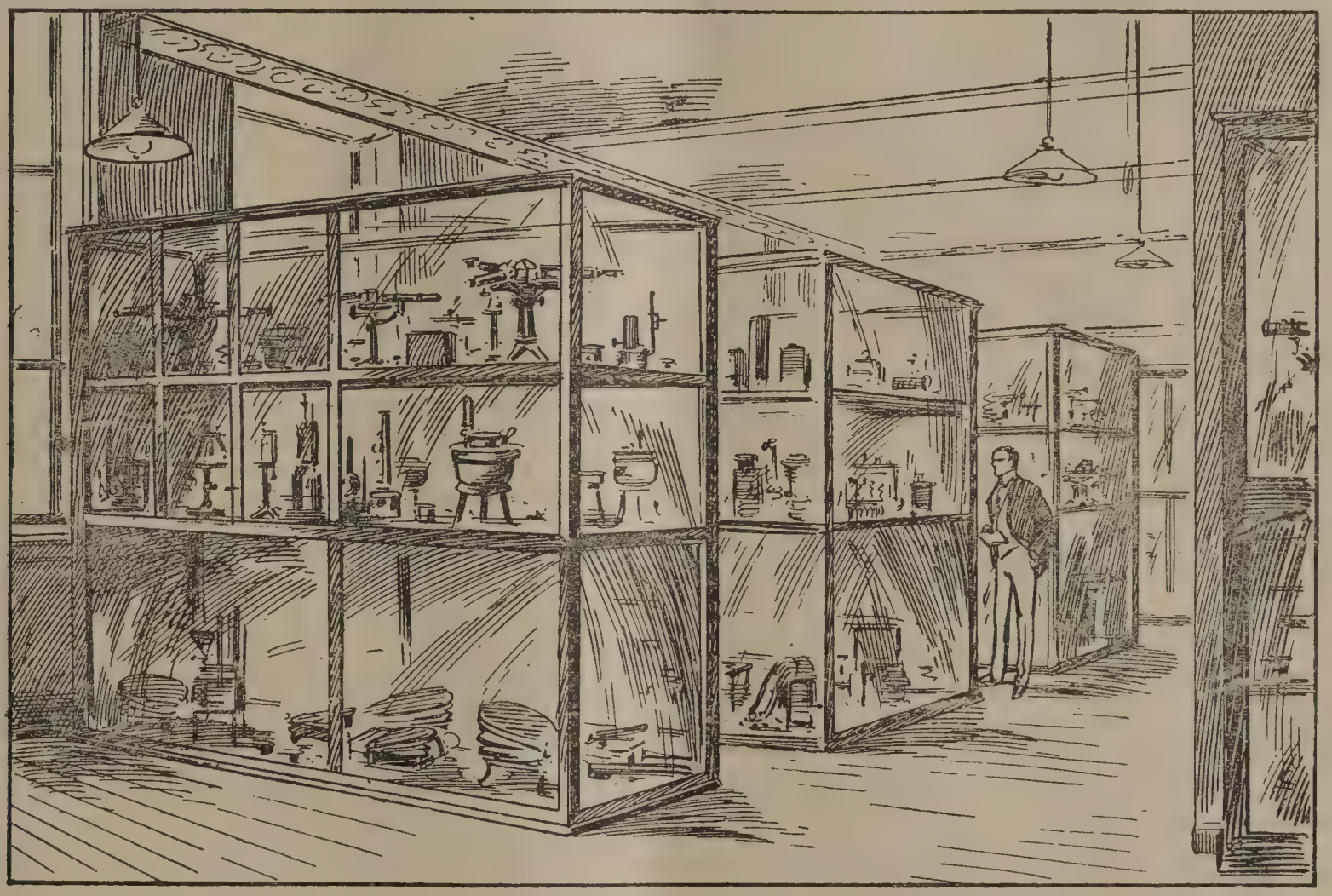
GOVERNMENT AND REGULATIONS.

The following committee has been appointed to conduct the affairs of the Laboratory, acting under the Committee of Managers of the Royal Institution, in which the appointment of directors and assistants is vested:—

The Rt. Hon. Lord Rayleigh.	Professor John Hopkinson.
Professor Dewar.	Dr. William Huggins.
Sir Frederick Bramwell, Bart.	The Rt. Hon. Lord Kelvin.
Sir Frederick Abel, Bart.	Dr. Ludwig Mond.

Robert L. Mond, *Honorary Secretary.*

The Professor of Natural Philosophy and the Fullerian Professor of Chemistry, whose names occur first and second in the above list, are the Directors of the new Laboratory, whilst Dr. Alexander Scott, M.A., formerly Jacksonian Demonstrator in the University of Cambridge, has been appointed the first Superintendent of the Laboratory. Dr. Scott is a Doctor of Science of Edinburgh University, and Master of Arts, of Trinity College, Cambridge. The following facts concerning his career should suffice to prove his fitness for his present position:—



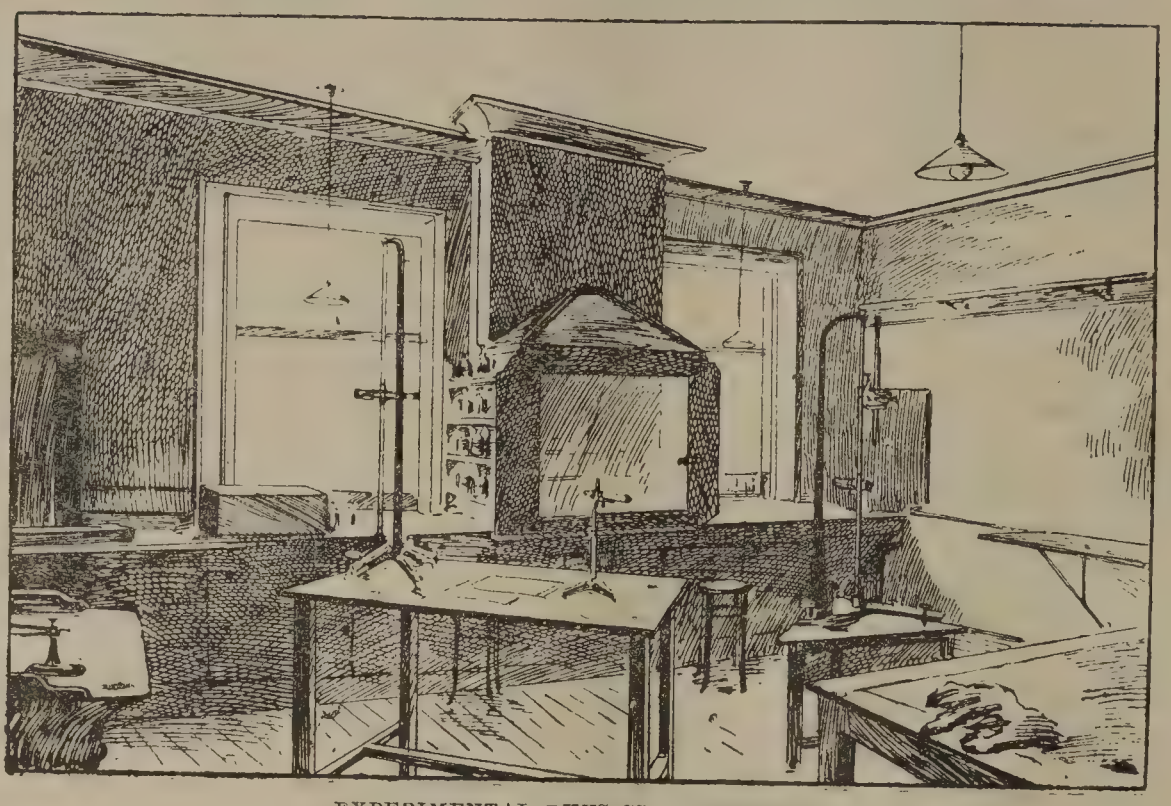
APPARATUS ROOM.

1875.—Senior Medallist in Chemistry, Edinburgh University.
1875-84.—Assistant to Jacksonian Professor, University of Cambridge.
1876.—B Sc., Edinburgh University.
1878.—Scholar of Trinity College, Cambridge.
1879.—B.A., with 1st Class Honours in Natural Science Tripos.
1882.—D.Sc., Edinburgh University.
1883.—M.A., University of Cambridge.
1884-91.—Science Master, Durham School.
1891-96.—Demonstrator to Jacksonian Professor, University of Cambridge.

Physical chemistry is Dr. Scott's special department of study, and he has conducted important researches on the determination of the composition of water by volume, atomic weights, etc., etc., whilst he is also the author of the well-known and indispensable 'Introduction to Chemical Theory' (A. and C. Black, 1891). His assistants include Mr. Arbuckle, late of Edinburgh and Glasgow Universities

and Mr. Dittmar, son of the late Professor Dittmar, who has worked under Lord Kelvin, and also received special training in mechanical work.

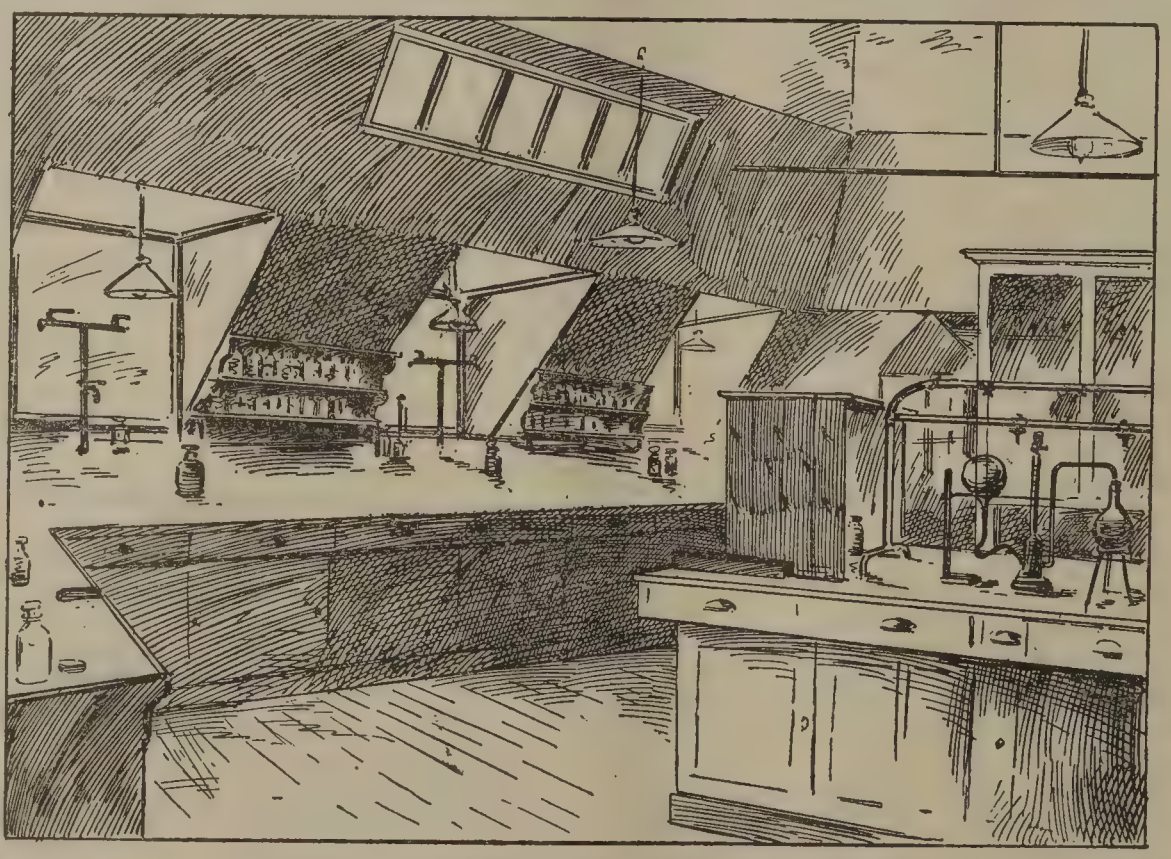
No person is to be admitted to the Laboratory as a worker who has not already been engaged in original scientific work, or who is not, in the opinion of the Laboratory Committee, fully qualified to undertake such work. On the other hand, no one is to be excluded on account of nationality or sex, and all admissions are to be free of charge, whilst workers may bring their own assistants with them. Gas, electricity, and water are also, as far as available, to be supplied to each worker free of charge, and chemicals may be so supplied, whilst all the apparatus belonging to the Laboratory is to be available for the use of workers. The year will be divided into three terms, and workers may be admitted for definite periods, at the expiration of which they will be eligible for re-admission, at the discretion of the Laboratory Committee.



EXPERIMENTAL PHYSICS LABORATORY.

Description of the Premises.

During the past two years the necessary alterations and fitting-up of the premises have been carried out under the supervision of Mr. Robert Ludwig Mond, M.A., F.R.S.E., son of the generous donor, and at the present time the Davy Faraday Research Laboratory is probably the most convenient and completely fitted place in the world for investigating problems in chemical and physical science. Passing through the entrance hall, near which are the cloak room and lockers for workers, there are two fine laboratories on the ground floor capable of affording sufficient working space for a large number of workers. The first of these will be devoted chiefly to organic chemistry, and the other to inorganic, the benches in the middle of each room being common to all the workers in that room, whilst the balance room is conveniently situated between the two laboratories. On inspecting the arrangements of these laboratories one is struck by the enormous amount of attention that appears to have been paid to the most minute details. Every bench, shelf and drawer seems to have been designed to afford the maximum of convenience: the sinks are fitted with a specially devised arrangement for retaining mercury, solid matters, etc., whilst allowing liquids to flow away readily; water and gas pipes, coloured differently to prevent confusion, are carried to every point where they are likely to be needed; miniature gas engines, hot air engines and water motors are seen in abundance; and electric lamps are found in the most out-of-the-way corners. The reagent bottles bear the names of their contents on enamelled labels and the chemical symbols are similarly enamelled in every case on the projecting part of the stoppers; moreover, both bottles and stoppers are marked with register numbers, and thus every possible precaution is taken against error arising in this direction. In addition to the usual drawers under each bench, there are shallow drawers for notebooks, the fronts of which are hinged, so that when turned down a level writing surface is presented, the use of which practically keeps the book free from danger in case of an accident on the bench. Opening out of the inorganic room is the specially built strong room devised



PHYSICAL CHEMISTRY LABORATORY ON TOP FLOOR.

for sealed-tube operations, and the glazed fume chambers, handy lockers, and other fittings have been planned with considerable foresight and knowledge of the petty difficulties and inconveniences that so often prove hindrances to work.

The first floor is devoted to an extension of the Royal Institution Library and to a private room for the Superintendent and the Honorary Secretary. The second floor to a store room for apparatus, the contents of which are calculated to arouse envy in the breasts of everyone interested in practical scientific work. Here are electrical, optical, and chemical apparatus of the most elaborate and expensive nature, all arranged in cases with sliding glass doors, so that the room resembles a museum in arrangement. There are balances by the dozen, silver and platinum crucibles as plentiful, and everything that the most advanced investigator could desire on a similar scale, including spectroscopes, polariscopes, thermopiles, cathetometers, resistance boxes, burettes and graduated glass vessels of all kinds. On the third floor are eight physical and optical rooms, which are mostly arranged for the accommodation of single workers.

THE BALANCE ROOM.

Ascending another flight of stairs, two large and four smaller chemical laboratories are found, together with a large and well-fitted dark room for photographic work. By means of sliding panels the one window in this room can be instantly obscured, or covered with dark ruby glass. Still ascending, out on the flat asphalted roof there is a table with gas and water supplies laid on, awaiting the coming of some aspiring investigator. Descending to the basement, the rooms there are found to be fitted on an equally lavish scale with the rest of the premises. Electric and other furnaces, together with stills, etc., occupy one large apartment, the pyrochemical room, which is equipped with everything necessary for assaying and metallurgical processes; another, fitted with lathe, joiners' bench, and glass-blowing tables, serves as a workshop; then there are storerooms, a boiler house, underground vaults for experiments requiring a constant temperature and comparative freedom from vibration, rooms for unpacking and washing bottles, storing accumulators, and various other purposes that it is needless to enumerate. Steam radiators maintain a constant temperature throughout the premises, and a hydraulic lift serves the whole building, the glass doors that open into this being so arranged that they can only be opened when the lift is in a safe position.

SUPERINTENDENT'S AND HONORARY SECRETARY'S ROOM.

CONCLUDING REMARKS.

But it is impossible, without appearing to quote from a catalogue, to enumerate a tithe of the convenient arrangements and appliances provided. In all there are sixteen separate laboratories for research work, each capable of accommodating one or more investigators with their assistants, and, if anything, the place is too complete and overstocked, for many of the more expensive pieces of apparatus may easily become old fashioned before they are required for use. In such cases, it would of course, have been more advantageous had the cost of the present apparatus been available. But the fault, if any, is in the right direction, and there is little reason to doubt that newer and better forms of apparatus, will be forthcoming as required. It now remains for the world o science to show its gratitude at this realisation of an idea which seemed to most people unlikely ever to be regarded as other than a dream. Very substantial, however, is the new messuage adjoining the Royal Institution, and equally substantial are its contents, the mere enumeration of which would seem like a romance to anyone accustomed only to small private laboratories or to scantily-equipped public ones.

Of course, perfect equipments are not everything, and with all its advantages the Davy Faraday Research Laboratory cannot be expected to produce better work than has come out of the older Laboratory of the Royal Institution, which may with reason be regarded as the "Mecca" of experimental science. Such a feat would be verging on the impossible, so important have the results of that work been. It may be long, too, before the new Laboratory produces anything as good as the old, but it will train efficient investigators to carry on work on similar lines to those associated with the names of Davy and his illustrious successors, down to the time of Dewar and Rayleigh, and in that way, if in no other, it will accomplish incalculable good. And now we must await results. Every budding Faraday will have, at least, a better opportunity than that the great experimentalist craved for and won at last by persistent assiduity. How many will seize the opportunity and how many will profit by it? Sufficient at least, let us hope, to maintain British science in the front rank, and to crowd honour on honour on the Davy Faraday Research Laboratory of the Royal Institution.

THE OPENING CEREMONY AT THE ROYAL INSTITUTION.

The formal opening of the new Davy Faraday Laboratory of the Royal Institution, by H.R.H. the Prince of Wales, took place in the lecture theatre of the Royal Institution on Tuesday afternoon, December 22, when the chair was taken by His Royal Highness, who was supported by a large audience, including the following :—

The Duke of Teck.
Earl Percy.
Lord Halsbury.
Lord Playfair.
Lord Ashbourne.
Lord Knutsford.
Lord Rothschild.
Lord Kelvin.
Lord Rayleigh.
Lord Walsingham.
Lord Belhaven and Stenton.
Rt. Hon. C. T. Ritchie.
Sir Henry Hawkins.
Sir Frederick Abel, Bart.
Sir John Lubbock, Bart.
Sir Henry Roscoe.
Sir George Stokes.
Sir Donald Smith.
Sir George Birdwood.
Sir James Blyth, Bart.
Sir John Brunner, Bart.
Sir Douglas Galton.
Sir John Donnelly.
Sir Henry Thompson.
Sir William White.
Sir Walter Prideaux.
Sir Francis Grenfell.
Major-General Festing.
Sir Henry Doulton.
Sir Owen Roberts.
Sir William Priestley.
Sir Benjamin Baker.
Sir Frederick Bramwell, Bart.
Sir James Crichton-Browne.
Sir Alexander Mackenzie.
Dr. Ludwig Mond.
Dr. Frankland.
Professor Horsley.
The Master of Peterhouse.
Mr. Garrard.
Dr. William Ord.
Dr. Buzzard.
Dr. Huggins.
Dr. Anderson.
Mr. J. Wolfe Barry.
Mr. Alexander Siemens.
Mr J. Fletcher Moulton.
Mr. William Crookes.
Mr. J. W. Swan.
Mr. J. Scott Dickson.
Dr. Hopkinson.
Professor Roberts-Austen.

Dr. LUDWIG MOND commenced the proceedings by reminding the Chairman that under the auspices of his august father, whose enlightened mind had fully realised that the pursuit of pure science is the most potent factor in the promotion of the intellectual and material progress of nations or of humanity at large, a movement was set on foot fifty years ago to found an institute in connection with the Royal Institution for the pursuit of pure chemistry. It was intended that the proposed institute should not only give practical and systematic instruction to students, but also provide a place where research work could be conducted by fully qualified investigators. This project was approved by Faraday and Brande, the then Professors, but the idea had to be abandoned because sufficient accommodation could not be found within the precincts of the Royal Institution. The first part of the scheme, however, was carried out a few years later by the foundation of the Royal College of Chemistry. The second part, that of providing a place where original work could be carried on by a number of independent investigators, has been waiting until now for its realisation. On learning these facts the speaker determined to found in London a Research Laboratory in purely scientific chemistry and in physical chemistry, that borderland between chemistry and physics from which in his opinion we may hope to learn more about the real nature of things than from any other branch of natural science. He had also come to the conclusion that such a laboratory would derive the greatest advantage if it could be associated with the Royal Institution of Great Britain, which has during its long existence made the promotion of research in those sciences one of its main objects, and the laboratories of which have been productive and are still productive of such marvellous results at the hands of the eminent professors elected by the Institution. The commodious house immediately adjoining the Royal Institution was therefore acquired and a scheme submitted to the managers, which they readily accepted with unanimity. Work was immediately commenced to alter the building so as to make it suitable for its new purpose, and, thanks to the advice which has been freely extended by scientific men all over the world and the active co-operation of Lord Rayleigh and Professor Dewar, Mr. Flockhart, the architect, and Mr. Robert Mond, to whom has been left the selection of the apparatus and the equipment of the place generally, the Laboratory which His Royal Highness was asked to inaugurate would stand favourable comparison with any other laboratory in or out of England as to the completeness and convenience of its appliances. It is provided with the best instruments made at the present day, and is unique of its kind, being the only public laboratory in the world solely devoted to research in pure science. In order to ensure its continued usefulness, the Laboratory has been endowed so as to cover the cost of maintenance of the fabric and all necessary current expenses, and it has been named the Davy Faraday Research Laboratory, in perpetual memory of those two great pioneers of science. Lord Rayleigh and Professor Dewar have consented to undertake the duties of Directors of the Laboratory without emolument, and an experienced Superintendent has been appointed in the person of Dr. Scott, nothing being now wanting for its success but a number of investigators, competent and ardent, to continue the great work of this century, the unravelling of the secrets of Nature. As soon as His Royal Highness declared the building open, persons of either sex or any nationality would be welcome within its walls if they could satisfy the Laboratory Committee that they were fully qualified to undertake scientific research in pure and physical chemistry, preference being naturally given to those who have already published original work. In establishing the Davy Faraday Laboratory, the speaker had, at the same time, been able to enlarge the old laboratories of the Royal Institution, and also to make additions to its library and reception rooms, which he hoped would prove a convenience to its members.

The PRINCE OF WALES then replied, saying it afforded him much satisfaction to assist at the opening of the beautifully arranged and well-equipped Research Laboratory which this country owes to Dr. Mond's generosity, and he congratulated the members of the Royal Institution of Great Britain upon this most important accession to its resources. The Royal Institution has always enjoyed a world-wide reputation, thanks to the marvellous work of the succession of illustrious men whose researches have very largely contributed to secure and maintain for this country a foremost position in science and its applications. The identification of the Laboratory with the names of two of the most eminent former Professors of the Royal Institution, Sir Humphry Davy and Michael Faraday, was a graceful act on the part of Dr. Mond, and most gratifying evidence of the great faith entertained by Lord Rayleigh and Professor Dewar of the benefit to the promotion of science which this wisely applied munificence is destined to realise, was afforded by the fact that they have undertaken the important duties of Directors of the new laboratory without any remuneration.

Professor DEWAR next, in a few introductory remarks, referred to the fact that the Prince had expressed a desire to witness some experiments with liquid air, and reminding His Royal Highness of a former visit when the experiments did not succeed, spoke of the improved appliances now possessed by the Institution for the study of low temperatures. He then proceeded to demonstrate in a most successful manner the marvellous effects produced by reducing the temperature of various substances to the boiling point of liquid air. At the conclusion of the demonstration the Prince chatted for a few minutes with Professor Dewar on the subject-matter of his experiments, and the proceedings then terminated.

PHARMACEUTICAL JOURNAL.

A Weekly Record of Pharmacy and Allied Sciences.

ESTABLISHED 1841.

Circulating in the United Kingdom, France, Germany, Austria, Italy, Russia, Switzerland, Canada, the United States, South America, India, Australasia, South Africa, etc.

Editorial Office: 17, BLOOMSBURY SQUARE, W.C.

Publishing and Advertising Office: 5, SERLE STREET, W.C.

LONDON: SATURDAY, DECEMBER 26, 1896.

THE PHARMACIST OF TO-DAY.

THE British pharmacist, under which term we include both pharmaceutical chemists and chemists and druggists, must nowadays be a man of many parts, and it is doubtful if he altogeth r realises how many-sided he can profitably be. That is to say, the average member of the craft is somewhat limited in his conceptions, and fails to grasp the fact that his fellows may advantageously develop in many directions not permitted by his own environment. Accordingly, if narrow-minded, he objects to countenance the diversion of any movement in which he is interested in a direction that promises no immediate result of value to himself. On the other hand, he is more often reasonable, and recognising the futility of expecting always to pose as the absolute centre of the universe, allows that tendencies unlikely to benefit him personally may possibly be of direct value to others. What the pharmacist should recognise himself as being generally, is the connecting link between the public and those who add to the sum of human knowledge. He must be a practical all-round scientist in fact, and the more he encourages this idea and fits himself for his part, the better he is likely to prosper and attain a secure position.

These reflections are suggested by the numerous responses received, in answer to the recent appeal to readers of the Journal to express an opinion as to the value to them of the paper of which they are the joint proprietors. The result may be briefly expressed by the statement that, amongst those who have taken the trouble to write on this matter—the cream of those who actively exert themselves for the good of pharmacy—there exists practical unanimity as to the very great service the Journal renders by supplying pharmacists with the news and other information they require, and also by serving as a means of inter-communication to which fair and honest expressions of opinions can be freely sent without risk of being burked because the sentiments expressed run counter to the interests of any outside class. For the *Pharmaceutical Journal* is conducted exclusively in the interests of retail pharmacists—those registered in Great Britain in general and those connected with the Pharmaceutical Society in particular, and it cannot be subverted to help in the exploitation of those to whom it addresses itself chiefly. This is a fact that should always be borne in mind in comparing the values of different journals, but is only too frequently overlooked.

But, in addition to expressions of general approval, encouragement has not been lacking on many points of detail. Thus, the pharmacist of to-day prefers short notes to long articles, a failing he shares in common with the majority of mankind at present, and is pleased with what the Journal has offered in this direction. He also finds it profitable to dabble in photography, is becoming increasingly aware of the very great help a practical acquaintance with microscopical technique may prove in business, likes his science in "bits," prefers good abstracts to wordy theses, and abhors the average pharmaceutico-political address and discussion, the publication of which, indeed, pleases few but those directly concerned in their perpetration, and those none too well as a rule. The pharmacist of to-day also wishes to be able to get information promptly when he requires it, is constantly on the look-out for useful suggestions, and sympathises with students in search of aid. In all these directions the Journal has endeavoured to meet his views for some time past, and if he looks for further progressive developments in the immediate future he is not likely to be disappointed.

AN "X" RAY METER.

AN exact method for determining the intensity of the "X" rays has been communicated to the Yorkshire Section of the Society of Chemical Industry by Mr. F. W. BRANSON. It is a photographic process and seems to be quite free from error. A quadrant of aluminium is taken, with millimetre steps (1-10). This is superimposed on a photographic plate, which is enclosed in a light-tight envelope, a vacuum tube is placed at a standard distance from the sensitive film, and an exposure of definite duration is given. Development with a standard developer at a temperature of 60° F. for five minutes will reveal a number of steps on the negative, that number being exactly proportionate to the intensity of the "X" rays. Comparative tests can thus be made with different vacuum tubes, or with the same tube under different conditions.

A CHRISTMAS APPEAL FOR THE BENEVOLENT FUND.

IN response to the appeal made on behalf of the Benevolent Fund in last week's Journal, a number of small amounts have been received, and one sum of twenty pounds, making a total of £25 12*s.* 6*d.*, or only one-tenth of what is required to make up the existing deficiency. Several days still remain, however, before the close of the year, and we hope to be able to record that a much larger sum has been forthcoming by the first of January. It is noteworthy that most of the subscriptions received have been sent by chemists who are regular subscribers to the Fund, and though this was perhaps to be expected, it is regrettable that such should be the case, and we appeal to those who are not supporters of the Benevolent Fund to do their utmost to make good the still remaining deficiency of two hundred guineas. Moreover, it should be observed that all amounts —large or small—should be sent as "subscriptions," not "donations," else they will not be available for the immediate purpose required.

ANNOTATIONS.

The Davy Faraday Research Laboratory was formally opened on Tuesday afternoon by H.R.H. the Prince of Wales, in the presence of the generous donor, Dr. Ludwig Mond, F.R.S., and a large assembly of the leading scientists of this country. Arriving at the Royal Institution at half-past three, accompanied by the Duke of Teck, the Prince was received by the managers and immediately conducted to the new premises, after a brief inspection of which he was conducted to the time-honoured lecture theatre, where Davy, Faraday, and all their eminent successors have in turn expounded the wonders of science. Here the modest ceremonial was soon ended, and after an address by Dr. Mond had been briefly responded to by the Royal visitor, Professor Dewar proceeded to interest the large audience by showing what can be accomplished by the aid of liquid air.

Dr. Ludwig Mond had good reason to feel proud as, in simple and well-chosen words, he explained why he had been led to do what, in round figures, cannot cost him less than a hundred thousand pounds. As in the title of the new laboratory, and in other ways, the donor's modesty kept his own individuality well in the background. But his is a notable gift, nevertheless, and sight should not be lost of what it includes: A conveniently situated house in the heart of London, fitted in a most sumptuous and lavish fashion with all that investigators can require, and endowed with a capital sum of £62,000, payable within thirty years, on which sum Dr. Mond will meanwhile pay interest at 2¾ per cent., thus providing an income of £1705 per annum. All this is entrusted to the Royal Institution, with a view to its being free "to men and women of all schools and of all views on scientific questions," and in order that the donor's adopted country may be maintained in the front rank in matters scientific.

Professor Dewar's Demonstration of the effects of the low temperatures obtainable by the use of liquid air was a great intellectual treat, and apparently by none more appreciated than the princely chairman. The wizard of Albemarle Street, aided by his capable assistants, Mr. Lennox and Mr. Heath, showed how nitrous oxide solidifies when poured into liquid air, how mercury in a closed bulb distils, and forms a brilliant mirror where the glass is cooled, and similarly how bromine instantly condenses from the vaporous form. A vacuum tube which phosphoresced brightly when the electric current passed became at once dark on the application of a sponge dipped in liquid air, soft metal was rendered rigid, and soft rubber balls became so brittle that they were shattered in pieces when flung violently against the wall. Whalebone and rubber tubing lost their elasticity when dipped in the fluid that boils at two hundred degrees below freezing point, a silver ball at the normal temperature caused the liquid to boil furiously, soap bubbles were frozen solid, and the colours of objects were totally altered.

The Liquid Air is quite harmless, and can be sprayed from an ordinary vaporiser or filtered through paper as easily as water. The diminution of temperature caused by it, however, causes all chemical action to cease—galvanic batteries refuse to work, phosphorus will not combine with oxygen, and only by first starting ignition can fragments of diamond be persuaded to burn in liquid air. The carbon dioxide then produced immediately solidifies and floats about in the liquid. The air of the lecture theatre was liquefied in the open whilst the spectators watched the operation, and the opacity of the resulting liquid clearly pointed to the presence of much carbon dioxide in the environment. Finally, salts, feathers, ivory and silk were dipped in liquid air, and their luminosity found to be so stimulated by the low temperature that they phosphoresced brightly. And so this most attractive performance was brought to a close.

The Members of the Royal Institution are not all so considerate as they might be. The lecture theatre of the Institution is but small, and the demand for tickets was unusually great on this occasion, so great indeed that tickets could not be issued to the press. Apparently, however, some tickets had been allotted to individuals who secured them on the chance that they might be inclined to go, and, inclination or ability being lacking when the time came, the result was that numerous seats were unoccupied which might have been used to advantage by those who were unable to obtain tickets. The managers would have been better advised on the whole had they adopted the plan which is too prevalent in some quarters, and issued more tickets than there were seats to spare, besides leaving the Members and their friends to secure their seats on arrival as usual, instead of arranging them all in advance. A much fuller house would thus have been secured, whilst the pleasure derived from attending the meeting would have been spread over a larger area, and the number of the disappointed reduced to a minimum.

Dr Theodore Curtius, Professor of Chemistry in the University of Kiel, is to succeed Kekule at Bonn. Curtius was born at Duisburg in 1857, and after leaving the gymnasium of his native town he studied at Leipzig University under Kolbe, at Heidelberg under Bunsen, taking his doctor's degree in 1882. He then became assistant to Baeyer at Munich, and in 1886 private tutor at Erlangen University. In 1889 he was appointed Professor at Kiel. Curtius is chiefly known by his researches on the diazo and diazoamido compounds of the fatty series, which led first to the discovery of diazoacetic acid, and subsequently to the production of hydrazine. The discovery of hydrazoic acid, N_3H, was another result of Curtius' researches which excited very general interest among chemists.

Telegraphy without Wires is possible, but not yet practicable to any great extent. It is, of course, based on the phenomena of induction which have been familiar since the days of Faraday, but only of late have the effects been utilised for telegraphic purposes, through considerable distances, by the aid of the telephone. Mr. W. H. Preece has recently summarised existing knowledge on this subject, and he thinks it is difficult to forecast the future of this new telegraphy. The ether is the medium of transmission, and serious difficulties are interposed by the interference of strong earth currents, the conductivity of sea water, and other causes not yet quite clearly understood. Telegrams have been transmitted across the Bristol Channel, however, and speech has been maintained across Loch Ness, whilst some time ago communication was established between the Island of Mull and the mainland during the time the connecting cable was broken. All which goes to prove that wires will not always be necessary in telegraphic operations.

Mr Alfred Nobel, whose death occurred a fortnight ago, was best known in connection with his labours in the direction of enabling powerful explosives to be handled with comparative safety. Thus, in 1864, he broke nitro-glycerin into harness, as it were, by mixing it with infusorial earth to produce dynamite, and similarly combined it with the equally uncertain gun-cotton, so as to form an explosive much safer to deal with than either when used separately. From this combination have sprung cordite and other

smokeless powders, now generally in use in European armies. Blasting gelatin, gelatin-dynamites, and gelignite are other Nobel explosives, and since the inventor devised dynamite, many others have entered the field, so that within the past thirty years quite a number of novel explosives have been placed upon the market. Nobel may be said to have advanced civilisation in two ways—directly by supplying suitable explosives for industrial purposes, and indirectly by rendering the possibilities of war more terrible, and thus checking its outbreak on slight provocation.

BOTANY AND BICYCLES are closely associated through the increasing demand of rubber for tires, and the accompanying necessity of finding new sources of supply. A dozen or more plants are now laid under contribution for this important economic product, and living specimens of many of these were exhibited at a recent meeting of the Royal Botanic Society by Mr. Sowerby, who stated that the lucky discovery of several rubber plants in Central Africa came just in time to check a marked upward tendency in prices. Originally brought from the East and West Indies, whence the name "india rubber," a large proportion of the present supply comes from America. The recklessness of collectors results in the unnecessary destruction of large numbers of plants, and even with the newer sources of supply it is probable that great scarcity of rubber may result in the immediate future. Several substitutes for this useful substance have been introduced from time to time, but none of any lasting value as yet, and a wide field is open for successful inventors.

"TAILED MEN HAVE AGAIN TURNED UP," observes *Nature*, in a recent issue. Presumably, the object of this inversion on the part of the gentlemen with caudal appendages is to display their tails to advantage. Or, is this only a little joke on the part of our sober and usually self-contained contemporary? At any rate, it appears to throw some justifiable doubt on the testimony of M. Paul d'Enjoy, who says he saw "a" tailed man turn up in the Indo-Chinese region some six years ago, though he has just recorded the fact in *l'Anthropologie*. The individual with the tail belonged to the Moï race, and descended a large tree, which he had climbed to gather honey, in similar fashion to the monkey, *i.e.*, by applying the soles of his feet to the bark. Curiously enough, he was able to converse intelligibly with M. d'Enjoy and his Annamite companions, but whether in the French language or some other tongue is not stated.

THE RIGHT USE OF WORDS has served the *Practitioner* as a text to medical students. Commenting upon Mr. Brudenell Carter's address at the opening of the School of Pharmacy, the Editor points out that, if the rising medical generation will take the trouble to learn the right use of words, those who follow them will be saved a vast amount of trouble, and knowledge itself become more accurate, whilst a great hindrance to its diffusion will be removed. The lesson taught by Mr. Carter is said to be needed by lecturers and writers of books as much as by students, and for examples of every possible fault of style reference is made to the correspondence columns of the medical journals, which are "like pathological museums of language, where every morbid process of syntax and every form of verbal monstrosity are (*sic*) displayed." The same faults are unfortunately only too often strongly marked in the correspondence columns of the pharmaceutical press, and we cordially endorse the suggestion that it is not a question of literary grace but of the humble yet necessary requirement of clearness of expression. Why will not correspondents practise clearness of expression, by considering first what they wish to say, and then using fewer and more suitable words?

THE BRITISH MYCOLOGICAL SOCIETY has recently been founded to encourage the study of mycology in all its branches—systematic, morphological, and pathological, and the publication of annual reports recording recent discoveries in the subject, more especially giving a brief synopsis of the work of European mycologists and recent additions to the British fungus flora. It is proposed also to organise an annual meeting or foray of a week's duration in some given district, the President to deliver his annual address on this occasion, whilst papers will be read and the species collected systematically arranged and exhibited. The annual subscription (5*s.* per annum) entitles a member to attend all meetings and receive a copy of the annual transactions. Applications for membership should be addressed to the Honorary Secretary, Mr. Carleton Rea, 34, Foregate Street, Worcester. Mr. George Massee, of Kew, is the first President, and the first meeting of the Society will be held in Sherwood Forest, commencing on the third Monday in September, 1897.

THE TOXICITY OF THE FLESH OF POISONED ANIMALS may easily prove a source of danger, and at a recent meeting of the Medical Society of Berlin, Lewin recounted some interesting experiments made to determine the toxicity of such flesh. Having given 20 centigrammes of strychnine to a fowl, he gave its flesh to a dog to eat: after the first 225 grammes the animal became ill, after a second portion it was seized with tetanic convulsions and died. The experimenter found that some animals are very tolerant of certain poisons, for example, fowls to strychnine, goats to hemlock, partridges to arsenic, rabbits to nicotine. He considers that although animals may have ingested poisons without inconvenience to themselves, it may easily follow that their flesh will prove toxic to man if used as food.

GYPSUM AND QUININE have been confounded (?) by some interested parties in America. Referring to this matter, the *Western Druggist* remarks that Professor Puckner has commented with satisfaction upon the fact that the local Board of Health has abandoned the pursuit of *Bacillus coli* long enough to interdict the sale of a quinine which has been proved to be pulverised gypsum. Plaster of paris may be useful as a decoration, but taken internally it is suggested that it cannot but fail to produce the effect of quinine, and when a misguided public is experimented upon in this manner it is high time the authorities interfered.

THE USE OF PARAFFIN AS A HAIR-WASH has become so general of late years, observes the *Medical Press*, that it is time to put before the public the danger of using it in this form. It often happens with all classes of people that the latter part of the day is the only time available for using the paraffin. Should a candle or lamp be upon the dressing table near a head from which highly inflammable vapour is proceeding, the result is not difficult to predict. Paraffin when used for the scalp should invariably be applied by daylight, and "this rule should be adhered to not only by medical men, but by chemists, nurses, and in fact the public generally."

THE TOXICITY OF BORIC ACID is well established, but the *Journal de Pharmacie* records some recent results which are of interest. Thus, Catrin reports that guinea-pigs, to which he had given doses of boric acid varying from 1 gramme to 2 decigrammes, died in from four to eight days. Marfan also states that toxicity has previously been observed by Mairet and Feré in epileptic cases, and that he himself has abandoned its use with phthisical patients on account of the gastric intolerance which resulted.

THE WORLD OF PHARMACY.

BUSINESS MEETINGS.

Liverpool Chemists' Association, Thursday, December 17.—Mr. Michael Conroy, President, in the chair.—A very useful and interesting paper, somewhat out of the usual style of such contributions to meetings of a pharmaceutical nature, was read by the President's son, Dr. Conroy, on the "Measurement of Temperature." The methods employed for the determination of temperatures within the range of the alcohol and mercurial thermometers were described and discussed shortly, various facts in the history of the evolution of these instruments being dwelt upon, the lecturer finally directing the attention of the meeting to the difficulties of properly estimating very high temperatures such as the melting point of metals and metallic salts. By the help of pyrometers of different types, kindly lent by Dr. Hurter, of the United Alkali Company, Dr. Conroy illustrated his remarks so clearly that the seemingly abstruse theories involved in the comprehension of the various electrical or rather magnetic methods of measurement were rendered very intelligible indeed, the remarks of the lecturer being followed with great attention by a fairly numerous audience. A further demonstration of apparatus was held at the close of the lecture.

Sheffield Microscopical Society, Friday, December 18.—Mr. G. T. W. Newsholme, Honorary Secretary, in the chair.—The President, Mr. A. H. Allen, lectured on "The Philosophy of the Microscope." He explained that he had chosen that subject because some people were at sea as to the optical principles involved in the use of the microscope. He reminded the gathering that we do not see light in the ordinary sense, but perceive it when it falls on something capable of reflecting it, and so reaches the eye. Another principle to which he called attention, is that an object always appears to be in that direction in which the rays of light last reach the eye. It was, Mr. Allen said, a highly important principle, which was sometimes not so thoroughly borne in mind as it should be. Mr. Allen then described the laws of optics utilised in the construction of the microscope, illustrating his observations by numerous demonstrations carried out by means of a beam of light. He also explained the magnifying power of different object glasses and eye-pieces, and dealt in a chatty but interesting and instructive way with other details connected with the optical construction of the microscope.

Edinburgh Chemists', Assistants', and Apprentices' Association, Friday, December 18.—Mr. James McBain, President, in the chair.—The following papers were read:—

Pearl Coating Pills.

BY JAMES GAULD.

The author strongly recommended pharmacists to coat their own pills in preference to using low-priced factory coated pills. After being made the pills should be allowed to dry for a day or two. They should then receive two coats of varnish (either tolu, ℥i., and ether, ℥i., or sandarac, 1 part, and absolute alcohol, 1 part). This prevented the pills from falling or pitting, and also prevented any essential oil discolouring the coating. For the coating the apparatus required was very simple, and consisted of three covered pots, a sieve, and a marble slab. The coating consisted of French chalk, or a mixture of French chalk and starch (℥i. to ℥i.), which was whiter. A small quantity of Martindale's mucilage of tragacanth (4 grains to ℥i. with ℥i. sp. vin. rect.) is placed in one of the covered pots, and the pills are evenly coated with this by shaking them up in the pot. They are next transferred to a covered pot containing the French chalk and rotated for a minute or so. Then they are turned into the sieve, which removes excess of chalk, placed upon the slab and carefully rolled under the palm of the hand, gently and gradually increasing the pressure as the coating dries. Afterwards they are turned into a clean pot and rotated gently, so as to make the coating adhere more firmly. The process is then repeated, two coatings being sufficient. To give the pills the high polish so much desired they should be allowed to stand now for a day to dry, and then vigorously rotate them for some time in a clean, smooth, covered pot. For prescription pills the same perfect finish cannot be obtained, but with a little practice two or three dozen pills can be finished satisfactorily in about fifteen minutes. Pink pills are easily made by adding a little carmine to the chalk.

"Ointments."

BY GEORGE SYME.

The author had experimented with the process suggested by Mr. Boa in 1894, by which many ointments may be prepared by melting and mixing the ingredients and allowing to cool without stirring. He had selected simple, resin, and spermaceti ointments. In the case of simple ointment the product was much harder than when prepared by the B.P. process of stirring till cold. By reducing the proportion of wax and using 1 part wax, 4 parts benzoated lard, and 4 parts almond oil, an ointment closely resembling the official one in consistency is obtained. He did not think the process could be successfully applied to resin ointment, for lumps always separated out on cooling, even when the quantity of wax was reduced. He had the same experience with spermaceti ointment. It seemed that the spermaceti tended to crystallise out on cooling. Eucalyptus ointment sets very hard on cooling if the B.P. proportions are used. A good result was got by using 1 part hard paraffin, 3 parts soft paraffin, and 1 part eucalyptus oil. The public would be certain to notice the difference between an ointment prepared by stirring and the same ointment prepared by cooling. He thought Mr. Boa's process could only be adopted in the B.P. if the proportions of the ingredients were altered as he suggested.

The Embryo Pharmacist.

BY WILLIAM CENTER.

The author humorously described the process by which the embryo pharmacist, having trusted too much to appearances and gazed with awe and wonder on the long rows of gold labelled bottles and the other mysteries of the pharmacy, passed his Preliminary and entered on the joys (?) of his apprenticeship. Alas! how soon he was disillusioned. The author then gave an interesting description of how the embryo pharmacist might study the science of botany, passing gradually from the known to the unknown. He soon began to know that a flower was more than merely the bright coloured part of a plant fit only as an ornament for his button-hole. He also soon learned that a potato was not a succulent root, but a stem or branch. Botany was the science which most exercised their powers of observation, and it was by observation and reflection that the embryo pharmacist would acquire such a knowledge as would enable him to apply it successfully in the study of materia medica.

Dispensing Notes.

BY LAUCHLAN S. LAMB.

The author had tried various excipients for protochloride of iron pills, and found that the best result was obtained by using extract of liquorice in the smallest possible proportion. If the mass, on standing a little, seemed too soft, a little powdered tragacanth should be added.

The next note was as to the following mixture:—

℞	Potass. Iodid.	3ii.
	Potass. Bromid.	3vi.
	Quin. Sulph.	36 grs.
	Acid. Sulph. Dil.	3i.
	Tinct. Aurantii	3vi
	Aquam	ad ℥vi.

If the quinine be dissolved in the water and sulphuric acid and the potassium salts be added, a white, flaky precipitate falls. By dissolving the potassium salts in three ounces of the water, and the quinine sulphate in the sulphuric acid, diluted with the remainder of the water and mixing the two solutions, a perfectly clear mixture is obtained.

The following was hopelessly incompatible:—

℞	Ammon. Carb.	3iii.
	Tinct. Ferri Perchlor.	3iii.
	Aquam	ad ℥vi.
Sig. 3ii. ter in die.		

Should this be dispensed or the prescriber communicated with?

Midland Chemists' Assistants' Association, Wednesday, December 16.—Mr. H. S. Lawton, President, in the chair. There was a fair attendance, and a paper was read by Mr. John Barclay on "Ergot and its Preparations." After reviewing the work which has been done on the subject in the past, Mr. Barclay commented on the recent pronouncement of Keller that but one alkaloid is present in the drug. He also showed the results of

experiments made with Beckurt's process of estimation, both on the drug and on samples of liquid extracts, prepared in several different ways. Mr. BARCLAY proposes to pursue his investigations further and to lay the result before the Association at an early date. In the discussion which followed Messrs. Lawton, Jessop, and Bindloss took part, and the proceedings closed with a vote of thanks to the reader of the paper.

Linnean Society of London, December 3.—Mr. C. B. CLARKE, M.A., F.R.S., Vice-President, in the chair.—Mr. R. MORTON MIDDLETON exhibited and made remarks on specimens of *Acerdasycarpum* strangulated by *Aristolochia tomentosa*. He also exhibited examples of *Helix cumberlandiana*, an extremely local land Mollusc from the carboniferous limestone of Tennessee, his remarks being confirmed by Mr. W. STEARM, an American conchologist, who was present as a visitor.—Mr. E. M. HOLMES exhibited specimens of *Liebmannia major*, a seaweed not hitherto detected in Britain, and so far as is known, recorded only from Finisterre. The specimens were collected at Lossiemouth in August, 1896. He also showed *Bonnemaisonia hamifera*, collected in May last by Mr. E. George, and in August last by himself. In 1895 living specimens of this seaweed, a native of Japan, were found at Falmouth by the late Mr. T. H. Buffham, and during the present year other examples had been found at Shanklin, Isle of Wight, showing that the plant had apparently become naturalised.—The Rev. GEORGE HENSLOW, M.A., F.L.S., gave the substance of a paper entitled "Does Natural Selection play any part in the origin of Species among Plants?' After defining a species from the Systematists' point of view, the author showed by examples that many specific characters in plants might be useful, indifferent, useless, or injurious; and that they were the direct result of a responsive action, especially to the physical environment. The origination of varietal characters, he thought, should be considered as quite distinct from "the survival of the fittest" and "the struggle for life" which determine the distribution of species in time and space. The individual differences of plants were held to be (as a rule) inadequate to produce variations of any systematic value, unless the plant migrated, and dimensions *per se* could have no "destructive" capacities whatever. Darwin's and Wallace's conditions for natural selection, viz., large populations and infertility between parents and offspring, had, he considered, no connection with the origination of variations, while the latter did not exist. On the contrary, species with large populations were (as a rule) invariable, while others might vary greatly, but only when in different soils, etc. Instead of "changed conditions of life" happening to any plant without migration, it was the latter which brought them about; instead of a struggle being required with the parent stock or other plants, it was the avoidance of the deteriorating effects of struggling which was most beneficial, and new varieties arise best when there was no struggle at all. The relative persistence or non-retention of specific characters was discussed, and it was shown that the permanency and heredity of acquired characters required time; five years being perhaps the average under cultivation. Permanency was only a relative term, all plants being liable to change again—hence arose improved varieties of long-fixed races of cultivated plants. He considered Darwinism to be based on a series of *à priori* arguments or deductions which had not as yet been verified, nor appeared to be capable of verification. On the other hand, new characters under changed conditions of life were to be seen everywhere, both in nature, under cultivation, and to be induced by experiment; so that self adaptation was proved inductively to be the true "origin of species." This was Mr. Herbert Spencer's view in 1852, when no thought of "natural selection" as a "means" had been suggested.

Proprietary Articles Trade Association, Wednesday, December 16.—Mr. JOHN THOMPSON, President, in the chair.—The SECRETARY read the report of the Executive Committee, in which, amongst other things, it was stated that 600 retail members had joined the Association since the former Council meeting, three months ago; that during the same period the articles on the Protected List had been increased from 18 to 42; that meetings had been held by the local associations at Bournemouth, Halifax, Birmingham, Manchester, and Nottingham, and in each case these organisations had decided to heartily support the Association. The P.A.T.A. had organised a meeting of the chemists of North Staffordshire at Stoke-on-Trent, resulting in most of the chemists in the district joining, and also in the formation of a local association, which would act as a local executive of the P.A.T.A.

SOCIAL MEETINGS.

Halifax and District Chemists' Association, Wednesday, December 9.—Mr. J. B. BRIERLEY, President, in the chair.—There was a good attendance at the first annual dinner, though the popular Secretary to the Association, Mr. H. W. Seely, was absent, owing to severe illness.—Mr. CLEMENT FIELDING, in proposing "The Halifax and District Chemists' Association," said he considered the Association might become a pharmaceutical force and a means of educational and commercial improvement.—The PRESIDENT, in responding, reminded his hearers that they were on the eve of celebrating the twenty-eighth birthday of the old Halifax Chemists' Association. They started in a very humble way in the room behind Mr. Hebden's shop. The Pharmacy Act having become law they were largely concerned with the details and interpretation of it, and were filled with anxiety for the training of the young men who were assistants and apprentices in the town. They all hoped that the Pharmacy Act would be of great advantage to them; how far their hopes had been realised they all knew. The development of company pharmacy having completely upset all their calculations, the question now was, How can the condition of the future chemist be ameliorated or improved? That seemed to him to be a subject that could well occupy the attention of their members during the coming year. Associations similar to that would be of immense advantage in strengthening the hands of the Proprietary Articles Trade Association. They had lost by death during the year an estimable member, Mr. Watson, of Sowerby Bridge. He died in the prime of life, full of work and usefulness. Another member, Mr. Robert Brook, had just retired from business, and was seeking a well-earned repose. In conclusion he invited the members to express their views on the question now before the local public with regard to closing on Boxing Day, which this year fell on Saturday, the weekly market-day. After a discussion of the question, the meeting decided, on the suggestion of Mr. W. C. Hebden, to recommend the chemists to open at 2 p.m. on December 26, and to remain open as long as the wants of their customers required.

Mr. MCCONNELL, Sowerby Bridge proposed "The Pharmaceutical Society of Great Britain," to which Mr. SWIRE, the oldest member of the Society present, suitably responded.

The "Mayor and Corporation of Halifax," given by Mr. JAMES FARR in a happy speech, was responded to by Councillor HEBDEN. Other toasts were "The Officers of the Association," proposed by Mr. THOMPSON, and responded to by Mr. BRIGGS; "The Visitors," submitted by the PRESIDENT and responded to by Dr. W. SMITH; and "The Proprietary Articles Trade Association," proposed by Mr. COBB, who coupled with it the name of Mr. Seely, whose name was warmly received.—During the evening songs were contributed by Messrs. BEAUFORT, THOMPSON, TIFFANY, and HEBDEN.

School of Pharmacy Students' Association, Friday, December 18.—Professor GREENISH, Dean, in the chair.—A well-attended social evening was held, among those present being Mr. Walter Hills, President of the Society, Mr. R. Bremridge, Mr. W. Warren, Mr. W. Martindale, and Professor J. Reynolds Green. The Chairman explained to the visitors present the motives which had actuated the Association in holding meetings of a social character. The School of Pharmacy Students' Association was formed about a quarter of a century ago, and its meetings were held by the permission of the Council of the Pharmaceutical Society, either in the lecture theatre or some other convenient room. Last year it was thought it would be very desirable if once or twice in the course of the session a meeting could be held which would not only bring the students of the present session into contact with one another, but also serve to bring together both past and present students. Last session two such meetings were held, and they appeared to answer their purpose admirably. It was thought desirable to continue those meetings, and this was the first of the present session. Professor J. Norman Collie then proceeded to exhibit a series of

"VIEWS IN THE HIMALAYAS,"

which, he said, were taken during a trip made about a year and a half ago in the Himalayas, in a part of the country a great deal of which no Englishman had visited before. He graphically described his journeyings in Nepaul, Thibet, Cashmere, and the Punjab. Many of the places he had visited were unexplored eight years ago, when the latest maps of the country were produced, consequently those thrown on the screen did not show several of the rivers, peaks,

and valleys that he and his friends saw. At the beginning of their experience among the Himalayas, the party ran a great risk once or twice of being obliged to go without food for some considerable time owing to misjudgment of distances, and the time required to get from one place to another. In some places they had to cut steps all the way, and their progress was so slow that they were away from camp two days and two nights on one occasion with only a few sticks of chocolate and about a dozen biscuits for three people. He then described the magnitude of the scenes—shown in the photographs—of the glaciers, mountains, valleys, and snow-clad peaks, etc., and also a mud avalanche which he witnessed. As each scene was depicted on the screen Professor Collie gave a brief descriptive outline of the history and natural characteristics of the people and vegetation met with in the valleys and mountains of the Himalayas, together with an account of several adventures on the rivers and glaciers, and personally with a large red bear.

At the close of his lecture he made a few remarks on mountaineering as a sport.

The CHAIRMAN, in expressing the thanks of the meeting, said it was a unique experience to be told of such wanderings by a man who not only took part in them himself, but who also took the photographs. It was not easy for the lecturer to convey to their minds the enormous size of those mountains and glaciers, but with the lantern slides he had done that most successfully.

Mr. WALTER HILLS also expressed the pleasure he had experienced in listening to the lecture, and an adjournment then took place to the Examination Hall, where refreshments were served.

Chemists' Assistants' Association, Thursday, December 17.—Mr. C. MORLEY, President, in the chair.—This was a social and musical evening under the direction of Mr. A. R. MELHUISH. There was a good muster of members and an excellent programme. During an interval light refreshments were served, and before resuming the programme Mr. MELHUISH proposed and Mr. PEARSON seconded a very hearty vote of thanks to all who had taken part in entertaining the company. This was carried with acclamation.

Midland Chemists' Assistants' Association, Thursday, December 10.—The first annual ball in connection with the above Association was held in the Edgbaston Vestry Hall, and was well attended, amongst those present being Messrs. H. S. Lawton (President), F. Ash, F. H. Alcock, H. M. Bindloss, F. Casson, R. L. Davis, J. H. France, H. Jessop, W. E. Landor, E. W. Mann, H. S. Shorthouse, C. Thompson (representing the Midland Pharmaceutical Association), etc., etc. The hall was nicely decorated, and a capital selection of music was provided by a string band under the direction of Mr. W. Geo. Halliley. Professor E. J. Reynolds officiated as M.C. Dancing continued until an early hour in the morning, the arrangements being most satisfactorily carried out by Messrs. W. E. Meggeson and E. Osborne, the Hon. Secs.

CHEMICAL SOCIETY.

An ordinary meeting was held on December 17, Mr. A. G. Vernon Harcourt, F.R.S., President, in the chair.

There was a large gathering of Fellows at this meeting. The first paper was—

"ON THE EXPERIMENTAL METHODS EMPLOYED IN THE EXAMINATION OF THE PRODUCTS OF STARCH HYDROLYSIS."

BY HORACE T. BROWN, F.R.S.; G. H. MORRIS, PH.D.; and W. H. MILLER.

Mr. BROWN, who read the paper in very brief abstract, said this was merely the introduction to a series of papers on the same subject. It related to the examination of the products of hydrolysis, and had been taken in hand in order to clear away the misunderstandings that existed among chemists, more especially Continental chemists, on this subject. He divided the paper into a number of sections, such as the "Determination of Solids," in which work he encountered much difficulty in the drying of starch "hydrolytes," a term he used to describe the products of hydrolysis; "Cupric Reduction," the reduced oxide being weighed as oxide or copper, particular attention having been paid to the exact composition and dilution of Fehling's solution; "The Mode and Time of Heating"; "Polarimetric Observations," etc.

Two more papers by the same authors, relating to the foregoing subjects, were also read by Mr. Brown—

"ON THE SPECIFIC ROTATION OF MALTOSE AND OF SOLUBLE STARCH."

The determinations, which had been made at 15°·5 C., do not confirm the observations of other workers. His rotation figure for maltose is $(A)_D$ 137° 93, and the rotatory power of soluble starch is $(A)_D$ 202°·0. Hydrated maltose, even after prolonged resting in a desiccator of phosphoric anhydride, contains 4·6 per cent. of water.

"ON THE RELATION OF THE SPECIFIC ROTATORY AND CUPRIC REDUCING POWERS OF THE PRODUCTS OF STARCH HYDROLYSIS BY DIASTASE.'

It appears from the figures the authors have obtained that they can deduce the specific rotatory power from the cupric reducing power and *vice versâ*. Mr. Brown says that the relationship stands on a sound experimental basis, and is a criterion of the purity of starch products.

Dr. ARMSTRONG, who made some complimentary remarks, said that the investigation of starch had arisen wholly from technical requirements—in the brewing industry, for instance. He asked Mr. Brown if the term "hydrolytes," which he had used in speaking of the products of the hydrolysis of starch, was a good one. He also wished to know whether compounds of these bodies could not be formed, bodies, he said, which had lain buried for twenty odd years.

Dr. RIDEAL seemed inclined to turn the discussion into one on philology. If opticity, he said, was a permissible term to express optical activity, would it be allowable to speak of "cupricity" as expressing the cupric reducing power? at which there was great hilarity on the part of the large audience.

The PRESIDENT made a few remarks, in which he said that he placed himself in the category of those who could not follow the papers very well.

Mr. BROWN, replying, said that he was not responsible for the term "hydrolytes." He thought, however, that it was a very convenient one.

The last paper read was entitled:—

"PERCARBONATE OF COBALT."

BY R. G. DURRANT.

The author commenced with an apology for the term "percarbonate," as since the title of his paper had been announced he had learned from Professor Thorpe that it was an inappropriate one. When cobaltic chloride is subjected to certain treatment a green solution or a green precipitate is obtained, which the author has been led to infer is a "percarbonate" from the action of various reagents upon the colour. A concentrated solution of potassium acid carbonate is added to a solution of cobaltic chloride in water. On the addition of hydrogen peroxide (20 vols.) there is first a green precipitate, which ultimately becomes a green solution. There is at the same time effervescence, and it was at this point that the author was misled in his previous paper. This green colour can also be obtained by using in place of hydrogen peroxide, sodium hypochlorite, chlorine solution, bromine water, by shaking with ozone and by electrolysis.

The green solution is fairly stable in the presence of acetic acid. Sulphuric acid, however, decomposes it readily. The colour, on adding acetic acid, becomes a little bluer, while the effect of sulphuric acid is to turn it pink. Various salts had been tried, but none alters the tint. The author had performed quantititive experiments in order to determine its composition, and all his results show that this body is in the cobaltic state, and he attributes to the salt the formula $Co_2(CO_3)_3$. The green solution is only formed when carbon dioxide is present at the moment of oxidation. The author suggests that the method may be used to separate cobalt from nickel.

Dr. RIDEAL said that when Mr. Durrant had read a similar paper last session he (Dr. Rideal) had suggested that sodium peroxide should be tried, and he was disappointed to find that Mr. Durrant had evidently ignored it or forgotten all about it. Perhaps, he said, it was due to the fact that the discussions on papers were not printed in the 'Proceedings.' This green colour recalled to mind a similar reaction in the case of ferrates, where a green compound of iron was supposed to have been formed, but this was subsequently found to be due to manganese. It occurred to Dr. Rideal that Mr. Durrant's green colour might be due to such an impurity in the cobalt.

A discussion then arose as to whether the meetings should be reported in the 'Proceedings.' Dr. ARMSTRONG said they should either have a reporter or else drop the 'Proceedings.'

The PRESIDENT said that if anyone wished his remarks to be published he should send in a short *précis*. This was not the time, however, to discuss the matter, and if the members really wished to have the meetings reported they must raise a motion to have it considered at a special meeting.

The following papers were taken as read:—"Electrical Conductivity of Diethyl-ammonium Chloride in Aqueous Alcohol," by J. Walker, Ph.D., D.Sc.; "Formation of Substituted Oxytriazoles from Phenylsemicarbazide," by George Young, Ph.D., and Henry Annable.

LEGAL INTELLIGENCE.

PROCEEDINGS UNDER THE PHARMACY ACT.

Sale of Poison by an Unregistered Person.

Pharmaceutical Society v. *Marston.*

On the 18th inst., before His Honour Judge Philbrick, Q.C., at the Bournemouth County Court, the Council of the Pharmaceutical Society of Great Britain sued James Marston, of Holdenhurst Road, Bournemouth, managing director of Marston and Co., Limited, for selling poison contrary to the provisions of the Pharmacy Act, 1868.

Mr. T. R. Grey, instructed by Messrs. Flux, Thompson, and Flux, appeared for the Society, Mr. Birt (Birt and Haviland) represented defendant.

Mr. Grey said in this case defendant was sued for a penalty of £5 for selling poison, viz., morphine, in contravention of the provisions of the Pharmacy Act.

Mr. Birt: I have instructions to appear and consent to an order.

Mr. Grey: This being an action for a penalty, it is desirable that I should call your Honour's attention to the Statute. An important object of the Statute is to prevent the selling of poison by unregistered persons. Section 1 makes it unlawful for any person to sell poison unless he is a chemist and druggist and registered under the Act; a subsequent section provides for the publication of a register, and makes that register evidence, and as the defendant's name is not to be found therein, it is evidence that he is not a chemist and druggist. It is the 15th Section which provides that any person selling poison, not being a duly registered chemist and druggist, shall be liable to a penalty of £5 for each offence. The defendant in this case is the managing director of Marston and Company, Ltd., a company carrying on a business in Holdenhurst Road, and on October 29 last he sold a bottle of Dr. Collis Browne's Chlorodyne, a medicine containing morphine, which was a poison included in the Schedule to the Act.

There were two cases he wished to call attention to. The case of the Pharmaceutical Society *v.* Piper, decided by the Queen's Bench Divisional Court, in which it was held that chlorodyne came within the Act, and the decision in that case was approved by the Court of Appeal in the case of the Pharmaceutical Society *v.* Armson. The further point he wished to call attention to was that an unqualified assistant, although acting for a qualified master, was liable for penalties if he sold poison; that was decided in the case of the Pharmaceutical Society *v.* Wheeldon, and of course included an unqualified managing director.

Mr. Birt: I am here to admit the offence. May I say that I am instructed that the sale of this chlorodyne happened during a short interval between the discharge of a qualified assistant and the engagement of another?

His Honour: There is only one duty for me, and that is to see that the law is obeyed. The defendant having offended there must be judgment for the penalty claimed. It is very important that dealers and the public generally should understand that the law prohibits the sale of poisons except by qualified persons.

Case under Section 17.

At the Petty Sessions held on the 18th inst., at Weston-super-Mare, Leonard Dale pleaded guilty to a charge of selling strychnine, contained in a rat poison, without complying with the regulations required by Section 17 of the Pharmacy Act, 1868, to be observed in selling poisons.

He was fined £1 and costs.

RICHMOND PETTY SESSIONS.

The Sale of Arsenical Soap.

At Richmond Petty Sessions, on Thursday, before His Worship the Mayor, and other justices, J. W. Tapling, of 3, Station Parade, Kew Gardens, Richmond, chemist, was summoned by R. A. Houghton, Inspector under the Food and Drugs Act to the County of Surrey, for having sold arsenical soap not of the nature and substance demanded.

Mr. Oldfield appeared to defend.

The facts showed that an assistant to the inspector obtained from the defendant's shop for 6*d.* a tablet of soap, the wrapper of which was labelled "Dr. Mackenzie's Arsenical toilet soap No. 2, unscented, perfectly harmless, S. Harvey." Defendant's assistant declined to have it divided into three parts. It was submitted to the analyst, whose certificate read, "I am of opinion the sample contains the parts as under, or the percentages of foreign ingredients as under: Soap free from arsenic, 100 per cent. Observations: there is no authorised formula for arsenical soap."

Dr. Stevenson, official analyst, in proving his certificate, stated that as he heard there was 1/100th part of a grain in this make of soap he was very minute in his analysis. He divided the tablet in half; one half he retained.

In answer to the Bench, he said he could go so far as satisfactorily to detect arsenic if it existed in any substance to the proportion of one part in half a million, and had there been 1/100th part of a grain per lb. in the soap, the amount in the whole sample would be 1/1600th part of a grain. In substance, even if it contained that amount, he should regard it as free from arsenic for all practical purposes.

The Mayor: It would have no effect on the skin. It is a popular fallacy that arsenic is good for the complexion. I have asked several chemists their opinion upon arsenical washes, and their value, and they said they never supplied them. If taken internally it was only 1/40th part of a medicinal dose, supposing the arsenic existed at the ratio of 1/100th part of a grain to the pound.

The Mayor: Then the statement "There is no soap which has so marvellous effect upon the skin and preventing the growth of hair" you consider incorrect?—It cannot be done with arsenic.

In cross-examination he said arsenic in lotions and washes for medicinal purposes had been obsolete for years. There were limits to his powers of detection, but he should say it was quite possible to trace arsenic in ordinary soap, its presence being due to the component parts of the soap. He had found arsenic in arsenical soap.

Mr. Oldfield submitted the soap was not a drug, and in order to convict under Section 6 of the Act the Bench must satisfy themselves it was.

Alderman Burt (one of the Bench): Do you admit there is no arsenic in it?

Mr. Oldfield: For the purposes of the argument. But I say the proceedings should be brought under the Merchandise Marks Act.

Mr. Dumbleby (one of the Bench) trusted that line of argument would be supported by evidence of fact.

Alderman Burt: In the face of your advertisement, do you say there is arsenic in the soap or not? Is your advertisement true, in fact?

Mr. Oldfield: It is.

Alderman Burt: If that is so, it is a drug, and you are on the horns of a dilemma.

The Mayor: The advertisement of the soap contends "There is no soap made which has such a marvellous effect upon the complexion, making hands white, nourishing the skin, and preventing the growth of superfluous hair." That is beyond toilet purposes.

Mr. Oldfield: I may say that is a little "puffing," which should not be used against my client.

The Mayor said the Bench had come to the conclusion that the soap was a drug.

Mr. Oldfield then applied for an adjournment so that the other moiety of the sample could be sent to Somerset House for analysis, and the Bench assented to the application.

HIGH COURT OF JUSTICE, CHANCERY DIVISION.

Hood and Company, v. *Hawkins.*

Mr. Justice North had before him in the Chancery Division of the High Court of Justice on Friday a motion in the action of C. J. Hood and Company *v.* William Henry Hawkins, sued as Mr. Wood, and trading as Wood's Sarsaparilla Stores. The plaintiffs sought an injunction to restrain the defendants, his servants and agents, until the trial of the action, or further order from passing or attempting to pass off bottles of sarsaparilla not of the plaintiffs' manufacture as or for the plaintiffs' goods by using the term "Wood's sarsaparilla."

Mr. Everitt, Q.C., and Mr. Cutler appeared for the plaintiffs, and in opening the motion the former learned counsel said the plaintiff's sarsaparilla had been sold in England for a great many years, and

within the last three years it had had a very extensive sale. They discovered that sarsaparilla was being sold by a person named Hawkins, who, for the purpose of confusing his sarsaparilla with that of the plaintiffs', had selected the name of Wood. The defendant, in answer, said for the purpose of his business he had used the name of Woodman, and that he had altered that name to Wood as being more convenient. The plaintiffs said it was a name so like theirs as to be calculated to deceive, and they had the evidence of witnesses who went to the defendant's shop and asked for Hood's sarsaparilla, and were provided with defendant's goods.

Mr. Swinfen Eady, Q.C., who, with Mr. Sebastian, represented the defendant, said the case of the plaintiffs was wholly denied, and it was not a case for interlocutory injunction, although there was a question to be tried.

Mr. Everitt replied that the use of the name was in itself suspicious. Mr. Gordon, the managing director of Hood and Co., filed an affidavit, in which he stated that the sale of Hood's sarsaparilla in England was vested in the plaintiff company. The article was popularly known as Hood's sarsaparilla. On hearing what the defendant was doing, he instructed the solicitor of the company to proceed against him, owing to the great similarity between Hood's and Wood's sarsaparilla. The defendant carried on business as Wood's Sarsaparilla Stores at 171, City Road, London. Several inquiry agents made affidavits stating that they went to the defendant's shop at different times and asked for Hood's sarsaparilla, taking particular care to pronounce the word "Hood" distinctly, and they were in each case served with Wood's article.

Mr. Swinfen Eady read the evidence of the defendant, in which he stated that he shortened the name from Woodman to Wood as a matter of convenience.

Mr. Justice North remarked that the defendant did not say he never heard of Hood's sarsaparilla, and there was a conspicuous silence as to when his business was established and when he took the idea of shortening his short name.

Mr. Eady said defendant stated he had not heard of plaintiffs' business or of his sarsaparilla. It was impossible for anyone to go into the defendant's shop without seeing the name Wood, and no one but a private detective could possibly be taken in. The defendant further stated that the get-up of his bottle was totally different to that of the plaintiffs'. Evidence of the assistants was put in totally denying the story of the detectives.

Mr. Everitt urged that the name was calculated to deceive, and did deceive, and that the defendant adopted the name knowing of Hood's sarsaparilla.

Mr. Justice North did not call upon Mr. Swinfen Eady. He said he would not grant an interlocutory injunction. He was not satisfied with the evidence of purchase, which was that of three detectives who went at different times to the defendant's shop. He did not blame persons sending detectives, but he did not feel competent to decide the motion on their evidence. Further, he was not satisfied with the defendant's evidence, and he could only hope that the articles the plaintiffs and defendant vend were better than the case made out before him. But the reason why he would not grant an interlocutory injunction was because of the length of time which had elapsed between the fact of the defendant selling his sarsaparilla as Wood's came to the knowledge of the plaintiff and the time the action was brought. On August 7 the plaintiffs knew what was going on, and the lapse of time was fatal to the motion. He therefore would make no order, except that costs of both parties should be costs in the action.

Beecham v. *Fast.*

The plaintiff in this action, before Mr. Justice North in the Chancery Division of the High Court of Justice on Friday, sought an injunction to restrain the defendant, a chemist and druggist, of Ablewell Street, Walsall, from selling as Beecham's pills any pills which were not of the plaintiff's manufacture. Council stated that it had been agreed that the motion should be treated as the trial of the action, and that a perpetual injunction should be granted against the defendant, who was to pay a certain sum to the plaintiff for damages and costs. Order accordingly.

Beecham v. *Ridding.*

In this case, which came before Mr. Justice Kekewich, on Friday last, the defendant, of Stafford Street, Walsall, consented to treat the motion as the trial of the action, to submit to a perpetual injunction restraining him from selling as "Beecham's pills," pills not of the plaintiff's manufacture, and to pay £40 by way of damages and costs.

CORRESPONDENCE.

The Benevolent Fund.

Sir,—Having recently been interested in a case brought before the Benevolent Committee, in which they voted a temporary grant, I was particularly touched at the humane, gentlemanly, and liberal spirit in which it was carried out; first, at the kind remarks, as reported, by the Chairman of the Committee and its members; second, at the wording of the letter accompanying the cheque; it was more like asking a favour than giving a donation—she was a lady in adversity equally so as when in prosperity; and thirdly, the husband having been a pharmaceutical chemist, but left the business for another, twenty years since, returning to it the last three years of his life; but the mere fact of his having been once on the Register rendered the wife and children eligible to participate in the Benevolent Fund. I might also mention the great interest they took in trying to assist one of the children's election for the Watford Orphan Asylum. Bearing in mind that the above was typical of most of the other cases, it occurred to me that as the funds were very low we should try and make a special effort in an original way, treating it more as a mission. On turning it over in my mind, I asked myself the question who it was that derived the greatest benefit from it, directly and indirectly? Why, the women and children. Then appeal to the ladies. And my object in introducing this is, that we should call a meeting of the wives and daughters of chemists, explain matters to them, get them interested, and ask them to try and make a Ladies' Special Effort Fund. I will not insult their intelligence and ingenuity by suggesting how it should be done, but will only broadly hint possibilities: say concert, conversazione, at home, or some might paint such as placques and screens, or fancy work, etc., etc. And I have not the least doubt but what they would find some convenient channel for converting the result of their labours into cash. Fancy the extra amount that might be raised throughout the country if the above idea was practically carried out. I am confident they will esteem it an honour to be allowed to participate in so laudable an object, and all that is needed for its success is merely the suggesting of it.

I also think the collecting of the annual subscriptions might with advantage be left in the hands of the ladies. Who could withstand the irresistible smile of a couple of ladies? Why, I fancy our bachelor friends would consider they got off cheaply by at least doubling their subscription.

Stonehouse, December 21, 1896. James Cocks,
Hon. Sec. Plymouth, Devonport, Stonehouse and District Chemists' Association.

The North British Board of Examiners.

Sir,—I have read with much sympathy the letters of your correspondents who are anxious to be put upon the Examining Board of the N.B.B. If, however, the complainants passed their Major as early as anxious pharmacists like them are likely to do—say at twenty-two—they have not waited too long for access to their desired haven. It is not wise to have very young men on the Examining Board. They no doubt know everything, and are fit to find out if others are equally ignorant. Old men are—all men are—liable to get into ruts and so make it easy for crammers to follow them. A man who passes his Major at twenty-two or twenty-three has a great deal to learn, notwithstanding he has managed to jink the conundrums and traps set at York Place or elsewhere. Let them keep up their Major subjects, let them do much for pharmacy in their town; let them exhibit with a magic lantern; let them take a part in the duties of citizenship in their town or village; let them also, in the pursuit of their calling, become acquainted with what is really necessary for the successful prosecution of that calling from the point of view of the public as well as from that of the shopkeeper and pharmacist. If they do so they will be better qualified, by the broadening of their horizon, to discover qualification in others. If they stop there, however, their experience will be their reward—and no mean one either. If they wish to come to the front they must push themselves to the front. First let them not sit at home and write to the Journal of the Society or of the Executive as if they were outside of it or it outside of them. Whenever possible go to the evening meetings, take part in the discussions and criticisms of communications read there; give opportunity to others to return similar courtesies by contributing to the syllabus. In short, be an active member, not a critic only, of the

P.S., N.B.B., or N.B.E. Then is there a social function on, patronise it by your presence. Then you are put down to reply for "The Strangers," to propose the "toast of the evening": "The Pharmaceutical Society," are put in the croupier's chair, and last of all into the chair. By which time, if you are not already an examiner, your further path to that position will be easy. Above all, "mind your own business."

December 21, 1896. CHESTERFIELD (72/42).

Sir,—Your anonymous correspondents, both of whom, I presume, are would-be examiners, have missed a favourable opportunity of advertising themselves as candidates for the coveted position by omitting to write their observations above their name and address. The question is one for straightforward dealing, and I for one am quite willing to help at the threshing of it out. I repeat that anything which may appear to have been wrong in the nomination of examiners is gradually being righted; that is to say, the honours are going round. But how are these to be kept circulating? Certainly not by aspirants concealing their identity and addressing readers of the Journal anonymously. Neither will they forward their possible nomination by describing the examiners as old fogies. No, gentlemen, that is not a term by which examiners past or present should be described. I urge that what is desirable is a larger number of ambitious men to select from, and that those who wish for nomination should put themselves forward, not by seeking election to the North British Executive, as I consider that to some extent a disqualification, but by cultivating the acquaintance of those annually returned by popular election or by making a direct application to the Executive through its Secretary.

Your correspondent is in error when he says I complain of the meagre number who join the Society. I do nothing of the kind. I merely referred to a grumble from the south, and it has occurred to me that many more would join our ranks upon becoming eligible, provided they were got hold of. I mean by that that instead of being merely handed their diploma and bowed out (or it may be cold-shouldered out) they were congratulated and otherwise considerately treated by having their diplomas handed to them with some slight ceremony in presence of the examiners and others. The idea of suggesting the apparent overlook of the younger Major men for examinerships as a reason for so few of the eligibles joining the Society is a fallacy. It is the want of a will and the absence of loyalty to the Society which prevents them giving it their full support. With regard to the recent appointments I may inform your readers that the Committee was unanimous, and at the meeting a week later the whole Executive was unanimous. There was no amendment at either meeting and no dissent, so what more could our constituents require of the elected body? If the Scotch Executive is not doing its duty, why not turn it out? The members are elected yearly, and if their constituents are dissatisfied, why not adopt the constitutional method and send as their representatives men whom they care more for? What is needed is more light, and it need not be limelight. Your anonymous correspondent, whose castle (he says) has fallen to pieces, ought to thank his stars that he was not obliterated by its ruins, that he is still to the fore, and, I may add, growing older daily.

I have been several years a member of the Scotch Executive, and have observed its doings closely. I have confidence in it as a representative body, and have no objection to uphold its doings in the face of adverse criticism on the one condition, that all its critics shall write their remarks, in good faith, and above their name and address.

St. Andrews, December 21, 1896. WM. R. KERMATH.

CORONERS AND THEIR WISDOM.

Sir,—Some few years back in your "Editorial" you made some remarks upon the knowledge of coroners, bearing upon the Pharmacy Act, and remarked how the coroner for this division seemed, in common with others, to know very little about it. I see in this week's Journal the remarks of the sapient coroner for Cheshire county at an inquest held at Crewe. I think it is about time the Pharmaceutical Society undertook to teach these gentlemen the points of the Pharmacy Act, and afterwards examine them in the law bearing on those points, as they now do the candidates for the Minor examination, which gives them the qualification under the Pharmacy Act, 31 and 32 Victoria, cap. 121. I would also beg to call attention to the fact (seeing so many apprentices and unqualified assistants have had recourse to prussic acid to destroy themselves) that never does it seem to enter a coroner's mind to ask the employer of such a youth, How was it he was able to obtain the poison with which he destroyed himself? If the recommendations as to the keeping, selling, and dispensing of poisons by the Pharmaceutical Society were strictly adhered to, such calamities should be prevented.

Torquay, December 18, 1896. WM. JNO. RAWLING.

A WARNING.

Sir,—We are informed that a person describing himself as a representative of ours is going about London endeavouring to obtain goods in our name.

As we have no representative in London and have not given authority to anyone to purchase goods for us, we desire to make it known that we only hold ourselves responsible for goods ordered direct, and on our official forms. The peculiarity of the person in question is that he has "lost his purse and his cheque-book."

Manchester, December 21, 1896. JAS. WOOLLEY, SONS AND CO., LTD. GEO. S. WOOLLEY, *Director*.

GLYCERIN OF CARBOLIC ACID.

Sir,—The B.P. strength of carbolised glycerin is not convenient for use internally or for local application. It is rarely prescribed for internal use but is much used as an application in tonsilitis and other throat affections, and in such cases I have seen it repeatedly prescribed in such a dilute form as 1 in 40. The French Codex gives it 1 in 20. No doubt the B.P. solution admits of being readily diluted, still there seems no reason why the strength in the new B.P. should not appear in keeping with its extensive use as a throat application.

Hawick, December 15, 1896. W. S. TURNBULL.

THE PROTECTION OF PRICES.

Sir,—I have been surprised that up to the present I have not seen any correspondence in the *Pharmaceutical Journal* on the at present burning topic of "the protection of the price of proprietaries," which has occupied a good deal of space in the columns of your contemporaries.

I think your appeal and the letter of Mr. Wiggins in the last issue, on behalf of the Benevolent Fund, point out that pharmacists are not in a position at present to ignore any legitimate means of adding to their incomes, and perhaps the fact of having lost a portion of their incomes through either the loss of the business in, or loss of profit on, a portion of their business, namely, proprietary articles, may account in no small measure for the lessened support and non-receipt of subscriptions from some of the three hundred who have failed to send in their usual subscriptions to this most worthy Fund. I venture to think, sir, that if pharmacists could regain their legitimate profits on proprietaries, some of which must be stocked by every pharmacist unless his business is to suffer loss and his clients inconvenience, that there would be fewer calls for grants in the future from the Benevolent Fund, and more and larger subscribers to it.

If minimum prices were fixed for proprietaries, the business in these articles would then in a great measure revert to the old channels, and bring back with it other business which has drifted away into quarters which do nothing to support either the aims and objects of the Pharmaceutical Society or its Benevolent Fund, but rather offer indirect opposition by opposing and doing their best to ruin its members.

Now, sir, I am not going to claim that the P.A.T.A. movement was started for philanthropic purposes, but I do believe that if it succeeds in its aims, the general run of pharmacists will be benefited monetarily and saved a lot of unpleasant friction in carrying on their business, and in consequence our Benevolent Fund will be better supported, for it is to pharmacists we must look for support and not large trading associations or bogus companies.

Some members of the craft appear to regard the P.A.T.A. movement as one intended to forward the interests of "quack medicines." That this is a mistake I am sure they would readily acknowledge if they could see a list of names of retail pharmacists who have joined the Association, and whose names are sufficient guarantee that they have not joined with that object, but rather to try and ensure to themselves a fair remuneration for proprietaries, many of which are being constantly ordered by medical men and others, that no pharmacist need blush to hand over his counter, including such articles as invalids' foods, medicated wines, natural mineral waters, disinfectants, etc. Supporting the P.A.T.A. movement entails no obligation on the individual either to stock or recommend any article that it is thought not desirable so to do.

The Pharmaceutical Society has in the past done its best to

prevent company trading as regards pharmacy, but has been unsuccessful unfortunately. If the P.A.T.A.'s efforts are carried out the individual pharmacist would in the future receive a fair profit on the sale of proprietaries, but would also have the satisfaction of knowing that he could not be undersold by the large stores and cutters generally, and thus one of the inducements held out by such establishments would be done away with; surely on this ground alone this Association deserves support.

For the benefit of any of your readers who are in the dark as to the objects of the P.A.T.A., I quote a passage from one of their brochures, to which I think no exception can be taken:—

"It seeks to establish a feeling of goodwill between proprietors and those who sell their articles, and to secure the friendly co-operation of all three sections of the trade upon a firm and equitable basis. It aims to do this by preventing cutting, and thus securing fair profits."

In conclusion I should like to be enlightened as to the reason why a question of so much importance to the craft has not been opened before in the *Pharmaceutical Journal?* Is it because the question is not academic enough for pharmacists to discuss it in their own Journal? Are they all doing so well that they can afford to discard proprietaries and ignore the profits on the same, or are they so faint-hearted that having lost what was once theirs, they are afraid, or have not sufficient energy to attempt to regain the same, and prefer drifting with the stream?

Plymouth, December 21, 1896. CHARLES J. PARK.

ELDER FLOWER OINTMENT.

Sir,—Although elder flower ointment has ceased long since to be official, it is still in request by the public, and its quality is a matter of interest to the pharmacist. Having signally failed in obtaining it so as to keep good for more than three months out of the twelve which must necessarily elapse between the times of its making, I attempted last summer to prepare it myself on original lines. My ideal process is one of enfleurage, and if any manufacturer of perfumery bases would only kindly apply his experience and the necessary plant to making an elder flower pomade, on the lines on which rose, jasmin, and other floral pomades are prepared, the best possible product would thereby be obtained.

The enclosed sample was made on June 25 as follows:—

Elder Flowers, free from stalks	13½ ozs.
Benzoated Lard	1 lb.

Stir together in a covered earthenware jar, and allow to stand for forty-eight hours, then melt in a water-bath with the least possible heat, and strain. Next add

Oil of Theobroma	2 ozs.

and melt together.

Since the above-mentioned date the antiseptic property of the theobroma has prevented any taint of rancidity from appearing, and it does not appear to spoil the consistence of the ointment.

Dover, December 19, 1896. J. F. BROWN.

*** The ointment sent is free from rancidity and of suitable consistence.—[Ed., *Pharm. Journ.*]

ARSENICAL SOAP AND NUX VOMICA PILULES.

Sir,—Having read your caution to chemists in the last issue of the Journal *re* "arsenical soap," I should very much like to know how we would stand as retailers of nux vomica pilules as regards the Food and Drugs Act authorities. A short time ago I submitted various samples to analysis (60 pilules each investigation), but failed to find a trace of strychnine or brucine in either sample. I may mention that 5 minims tinct. nucis vom. B.P. gives a slight precipitate with Thresh's reagent, whilst 1 drachm tinct. nucis vom. 1x. does not.

Lewisham, December 16, 1896. W. ROBERTS.

*** The absence of the essential ingredient in any "drug" will, of course, render the seller liable under the Sale of Food and Drugs Act, and it has been suggested that when the quantity of a poison is so minute that it cannot be recognised, it may be assumed that it is not present.—[Ed., *Pharm. Journ.*]

ANSWERS TO QUERIES.

LOWE'S PURE WATER TEST.—We do not know this test. Have you got the correct name? [*Reply to* T. L. B.—72/27.]

TINCTURA IODINEI, E.P.—Dissolve iodine, 1 oz., in rectified spirit, 16 oz. [*Reply to* S. H.—72/20.]

BOOK ON ALGÆ.—M. C. Cooke's 'British Fresh Water Algæ' is the only useful book for determining species. Your specimen appears to be *Oscillaria antliaria*, Jurg., but it is somewhat difficult to determine. [*Reply to* E. W. P.—72/36.]

MALTING AND DISTILLING.—Refer to Spons' 'Encyclopædia,' and to the list of works published by E. and F. N. Spon, 125, Strand, London. [*Reply to* THORAX.—72/35.]

MEDICAL LEXICON.—Yes, it contains brief definitions of the words you mention. The price is net, but if you send 3*s.* 1*d.*, postage should be covered. [*Reply to* T. L. B.—72/27.]

LIN. POT. IODIDI C. SAPONE (UNNA).—A correspondent points out that the formula you require was referred to in a note on superfatted soap by J. R. Johnson, that appeared in the Journal for June 16, 1894. The formula there quoted is:—Superfatted soap (5 per cent.), 9 parts; potassium iodide, 1 part. [*Reply to* F. J. ELLIS.]

POTASSIUM BICHROMATE.—The note is quite correct, and neither of the other substances you name is not a scheduled poison. Nevertheless, chemists will do well to label any poisonous substance "Poison," although not included in the Schedule. [*Reply to* T. C. B.—72/40.]

CATTLE SPICE.—We cannot give you the correct formula of any proprietary article; such as are published must necessarily be little better than shrewd guesses. The following gives a very good "spice":—Gentian root, cummin, fennel, anise, coriander, grains of paradise, African ginger, licorice, dried sulphate of iron, flowers of sulphur, long pepper, caraways, fœnugreek, salt, all in coarse powder, of each 1 lb.; locust bean meal, 7 lbs. Mix thoroughly. [*Reply to* W. N.—69/31.]

PEROXIDE OF HYDROGEN IN A PRESCRIPTION.—The prescription "℞. Sol. Peroxide of Hydrogen, 15 %, ℥ij. To be used as directed," would probably refer to peroxide of hydrogen, "15 volumes," *i.e.*, one volume evolving 15 volumes of oxygen. The so-called "20 volumes" of trade often falls to this, or in warm weather considerably below it. A solution containing 15 per cent. of real H_2O_2 would evolve about 50 volumes of oxygen, and would neither be stable enough for dispensing nor safe to handle. Doubtless 15% is a miswriting of 15 volumes. [*Reply to* JUNIOR.—71/43.]

BURNISHING PEARL-COATED PILLS.—These are burnished by continuous rotation in a clean dry metal cylinder, an elliptical motion being given to the vessel, on the large scale by machinery, in smaller quantities by hand. The coating should contain some French chalk; by attrition against each other and the sides of the cylinder the coats of the pills will assume a fine gloss. Varnish is used after the coating is applied, but it is sometimes employed before coating (*vide Ph. J.* [4], ii., 270). With a little practice you should be able to turn out very good pills by this method. [*Reply to* F. W.—70/38.]

OBITUARY.

WARRIOR.—On October 27, Henry Warrior, Chemist and Druggist of Northallerton, Yorks. Aged 49.

PARKIN.—On December 14, Thomas Parkin, Chemist and Druggist, of Bolsover. Aged 67.

GREENSILL.—On December 15, Henry William Greensill, Chemist and Druggist, late of Fishponds. Aged 61.

MAISH.—On December 20, John Robert Maish, 46, Beaumont Street, Portland Place, W. Aged 49. Mr. Maish represented Messrs. Herrings and Co., 40, Aldersgate Street, E.C., for about sixteen years in the country, and latterly in the suburbs of London. He was greatly respected by all with whom he came in contact.

NEWSPAPERS sent to the Editor should have the paragraphs marked to which it is desired to call attention. Copies have been received during the week of the following:—*The Echo, The Grimsby News, Elgin Courant and Courier, The Newark Advertiser, Henley and South Oxfordshire Standard, The Public Health Journal, Bristol Times and Mirror, East Anglian Daily Times.*

COMMUNICATIONS, LETTERS, etc., have been received from Messrs. Allan, Andrews, Austen, Beach, Bell, Bird, Bowden, Brown, Carroll, Cocks, Coull, Farr, Grimble, Guyer, Hill, Hogg, Holding, Hunt, Kent, Kermath, Line, Maddison, Park, Pollard, Prosser, Rawling, Reynolds, Robb, Roberts, Smith, Stroud, Thomps n, Turnbull, Waddington, Warrell, Wilkinson, Williams, Woolley.

MARKET REPORT.

[*Specially compiled for the Pharmaceutical Journal.*]

[*The quotations here given are in all cases the lowest net cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.*]

LONDON, JULY 2.

There are few changes to report in the chemical market this week. Carbolic acid is rather firmer for crystals, tartaric and citric acids are unchanged, whilst cream of tartar is very firm at a marked advance. Crude camphor is decidedly firmer, whilst in the refined article a good business is being done. The most important move amongst the fine chemicals has been an announcement to the effect that the special discount of 15 per cent. on salicylic acid and salicylates, which was stopped by the makers at the end of March, has again been put in force. The ordinary quotations of course remains unchanged. The alkaloid market is unchanged. Amongst crude drugs, saffron, senega root, and jalap are very firm and a fair amount of business has been done in both varieties of ipecacuanha. Glycerin is very firm at unchanged rates, spices are generally unchanged, and shellac is quiet. In the essential oil market star anise and lime oils are lower, whilst peppermint oils generally are flat. Full details will be found below:—

ACID, CARBOLIC.—The market is firmer for some grades of *Crystals*. The current quotations are as follows:—*Crystals*: 34° to 35° C., 6½d.; 39° to 40° C., 7¼d.; 39° to 40° C. (*detached Crystals*), 9d. per lb. *Crude* is decidedly firmer, and now quotes at 2s. 1d. for 60 per cent., whilst 75 per cent. is worth 2s. 6d. per gallon. *Liquefied* and cresylic are unchanged at 1s. and 11d. per gallon respectively.

ACID, CITRIC—Is still in the position last reported, and the market is quiet. *English* brands of acid in makers' hands still quote at 1s. 2d., whilst second-hand holders offer at 1s. 1¾d. *Concentrated juice* offers at £13 5s. per pipe, *f.o.b.*, Messina.

ACID, SALICYLIC, AND SALICYLITES.—During the week the wholesale drug trade has been notified that the extra allowance of 15 per cent. discount from the net invoice prices, which was discontinued at the end of March, will again come into force. This alteration has been occasioned by the low prices which have lately been prevailing for carbolic acid, and, of course, does not affect the actual quotations for salicylic acid and it salts, which are as follows:—

	In 1 cwt. kegs	In 1 lb. cardboard boxes.	In 1 lb. bottles.
Salicylic acid:—	Per lb.	Per lb.	Per lb.
Powder	2s. 3d.	2s. 6d.	2s. 8d.
Crystals		2s. 9d.	2s. 11d.
Phys. pure		4s. 6d.	4s. 8d.
Sod. Salicylate:—			
Powder		2s. 7d.	2s. 9d.
Crystals		3s. 2d.	3s. 4d.
Phys. pure		—	4s. 4d.

ACID, TARTARIC.—The market is quiet. *Lawes'* and *Kemball's* brand of *English* acid are still quoted at 1s. 3d., whilst *foreign* ditto, both in *crystal* and *powder*, offer at 1s. 2d. to 1s. 2¼d., according to brand.

AMMONIA COMPOUNDS. — *Sulphate* is steady at unchanged rates, grey 24 per cent. being still quoted at £8 2s. 6d. on the spot. *Hull*, *Leith* and *Beckton* are all firm at £8. *Sal ammoniac* still quotes at 37s. for *firsts* and 35s. for *seconds* on the spot. *Carbonate* is unchanged at 3d. in *casks*, 3⅛d. in *kegs*, and 3¼d. in *jars*, whilst *powder* is quoted ¼d. per lb. above these rates. *Liquor* is worth 3d. to 3¼d. per lb. less 5 per cent.

CAMPHOR (CRUDE).—There has been a firmer tone in the market during the last few days, and quotations are higher. On Tuesday *Formosan* camphor, distant shipment, was quoted at 80s. *c.i.f.*, with 87s. 6d. *c.i.f.* near at hand bid and refused. Business was done in 500 piculs of *Formosan* camphor at 75s. for June to August shipment, and 75s. to 76s. 6d. for July to September, both *c.i.f.* terms.

CAMPHOR (REFINED).—The quotations of *English* and *German* refiners vary considerably. In the latter instance a circular was issued by the agent of one of the *German* manufacturers at the beginning of the week, which gave the following quotations for one ton lots of *bells* and *flowers*:—Spot, 1s. 2½d.; August to September delivery, 1s. 1½d. *c.i.f.*; October to December ditto. 1s. 0½d. *c.i.f.* On the other hand, the *English* refiners have made no change in their quotations, nor is there any prospect that they will do for some time to some. At present they are busily engaged in executing orders, although some difficulty is experienced in getting the crude material.

CASCARA SAGRADA.—The market is quiet. On the spot quotations for sound bark range from 19s. to 27s. per cwt., according to age.

COCA LEAVES —*Truxillo* leaves have been arriving rather freely during the week and some good quality will be offered at next week's sales. Privately 1s. to 1s. 2d. per lb. is quoted.

COLOCYNTH.—The market is very firm. Holders of *Turkey* colocynth still quote 2s. 8d. per lb. for good apple, and this price has been paid. *Spanish* offers at 1s. to 1s. 2d. per lb.

COAL DISTILLATION PRODUCTS.—*Toluol* quotes at 2s. per gallon for *pure*. *Benzol* is very firm at 2s. 4½d. for 50 per cent., whilst 90 per cent. is quoted at 2s. 9d. per gallon. *Creosote*: 1⅛d. per gallon. *Crude Naphtha*: 30 per cent. at 120° C. quotes at 1s. per gallon. *Solvent naphtha*: 95 per cent. at 160° C. at 1s. 6d.; 90 per cent. at 160° C. at 1s. 4½d.; and 90 per cent. at 190° C. at 1s. 1d. per gallon. *Anthracene*: 13 *A*, 10d.; *B*, 8½d. per lb. *Pitch*: 31s. 6d. per ton, *f.o.b.* *Tar*: *Refined* quotes at 1¾d., and *Crude* at 2d. per gallon.

CREAM OF TARTAR—A very firm market Business has been done at advancing rates since our last report, and the closing quotations show an advance of 2s. to 3s. per cwt. On the spot best white *French crystals* are now quoted at 98s., whilst for *German* brands of *powder*, 100s. to 102s. is asked. For shipment from Bordeaux 94s. *f.o.b.* is now asked.

GALLS.—The market in *Persian* galls is quiet, and but little business has been done, the only variety which has claimed attention being *greens*. The current quotations are:—*Blues*, 52s. to 53s.; *greens*, 42s. to 45s.; *sorts*, 48s. to 50s.; and *whites*, 38s. to 43s. per cwt. *China* galls are quite neglected, no business whatever having been done.

GENTIAN ROOT—Continues to decline in price. For good *French* root 20s. per cwt. is now quoted on the spot.

GINGER.—The market is quiet. At the weekly sales *Cochin* was in very poor demand, and the majority of the catalogue was bought in. Rough kinds sold at 33s. for fair dull, whilst washed were bought in at 35s. Of native kinds 66s. 6d. was paid for ordinary *A* cut, 65s. for bold, and 45s. to 50s. for medium to small limed. Limed *Japan* sold at 18s. 6d. for fair, and 13s. 6d. to 15s. for mouldy. *African* and *Jamaican* root was all bought in.

GLYCERINE.—The market remains firm at last week's prices, 70s. to 72s. being quoted for double distilled *German* glycerin of 1260 specific gravity. For *Schering's* brand 75s. is quoted.

HONEY.—It is said the new crop of *Californian* honey is very small, and higher prices may be expected.

IPECACUANHA.—The market is very firm. A fair business has been done privately in *Brazilian* root at fully steady rates. *Columbian* root is also in good demand, the current quotations privately being 4s. 4d. to 4s. 5d. per lb.

MENTHOL.—There is little or no change to report in the position of this article, although quotations vary considerably, 10s. 6d. to 11s. being asked on the spot, according to holder. For delivery 9s. 6d. to 10s. per lb., *c.i.f.* terms, is quoted.

OIL (COD LIVER).—The London market is very quiet, the nominal spot quotation for new season's *Norwegian* oil being 180s. per barrel. During the fire at Sharp's wharf some 600 barrels of cod liver oil were destroyed.

OILS (ESSENTIAL).—*Star anise* oil is again lower. On the spot 7s. 1½d. has been bid and refused during the week, and the current quotation is now 7s. 3d. to

7s. 6d. per lb. *Cassia* oil testing from 70 to 75 per cent. of cinnamic aldehyde has sold during the week at 7s. 3d. per lb. net, *f.o.b.*, London. We have not heard of any business in the lower grades. *Peppermint* oils continue to drag. *H. G. Hotchkiss'* brand can be bought at 9s., and perhaps a trifle lower, whilst 40 per cent. *Japan* oil is quoted at 6s. 6d. on the spot, and 5s. 6d. for delivery, *c.i.f.* terms. *Dementholised* offers at 4s. to 4s. 3d. per lb., *c.i.f.* for shipment. *Oil of Limes* is easier, and now quotable at 5s. 3d. per lb. on the spot.

OILS (FIXED) AND SPIRITS. — *Castor*: *Italian* oil is still quoted at 30s. 9d. to 31s. 6d. per cwt., *c.i.f.* terms for ttsteless oil, *Cotton* is rather quiet, although prices are fairly steady on the spot. £15 15s. to £16 is asked for *refined* oil, according to brands and packages. *Coco nut* is quiet at unchanged rates, Ceylon being quoted at £22 10s., and *Cochin* at £26 10s. to £26 15s.1 on the spot. *Linseed* is easier, and for oi. in barrels £18 would be now accepted *Rape* is dull of sale at easier rates, £23 15s. to £24 being now quoted on the spot. *Palm*: *Lagos* quotes at £20 15s. on the spot. *Olive* quotes at £29 to £30, and *Lovant* at £29. *Turpentine* is quiet at easier rates, *American* spirit being now worth 19s. 7½d. to 19s. 9d. on the spot. *Petroleum* is unchanged, *Russian* being quoted at 5d., *American* at 5⅝d. to 5⅜d., and *water white* at 6½d. per gallon.

QUICKSILVER.—There is no change in the quotations, which are £6 10s. in importers' hands, whilst £6 9s. 6d, is asked by second-nand holders.

QUININE SNLPHATE—Remains quite neglected, with no enquiries whatever. The best brands of *German* quinine are quoted nominally at 1s. 0½d. per oz.

SENEGA ROOT.—Business has been done privately at 1s. per lb., which shows a steady market. During the week 11½d. has been bid and refused.

SHELLAC.—Privately the market has been quiet, and only a limited business has been done. At the weekly sales a fair demand was shown, and steady prices were paid, *TN Orange* being quotable at 93s. per cwt. *Button* was in better supply, and sold at easier rates, whilst *Garnet* was quiet, 84s. to 85s. being accepted according to condition. The following prices were paid:—*Orange*—Blocky *AA.* in circle, 90s.; fine pale *B*, 115s.; and good bright *SG* diamond, 105s. *TN Orange.*—Fair bright sold at 92s., ditto cakey and blocky at 89s. to 90s., and pale flint block at 88s. *Button.*—Ordinary to good cakey *BL* 1 sold at 86s. to 92s., and hard block at 77s. to 82s. per cwt.

SPERMACETI—Is still slow of sale, and quoted at 1s. per lb. on the spot for fine *American.*

SPICES (VARIOUS).—*Cloves* continue slow of sale. In auction *Zanzibar* sold at steady rates, 1⅞d. being paid for medium dark, and 2½d. for good bright palish. *Cinnamon chips.—Ceylon* were bought in at 3⅛d., whilst *quillings* sold at 7d. to 8d. per lb. *Pimento*: Steady. For ordinary to good fair, 2⅛d. to 2⅜d. was paid, and 2¼d. for good fair. *Capsicums.* Small, long red *East Indian* sold at 13. 6d. per cwt., whilst *Natal* were bought in at 80s. *Chillies.—Zanzibar* were bought in at 40s. per cwt.

TURMERIC—Remains slow of sale. At the weekly sales fair *Madras* finger was bought in at 10s. 6d. per cwt.

NEWCASTLE CHEMICAL MARKET, June 30.—This market for the principal products is rather slow, with the exception of sulphur, which, owing to its scarceness, is more firmly quoted. Tar products are actively sought after, and are slightly dearer. Prices are:—Bleaching powder: £6 5s. to £7 5s., according to market. Soda crystals: 36s. to 42s. 6d. Caustic soda: £7 5s. to £7 15s. for 70 per cent. Alkali: 52 per cent., £5. Soda ash: 52 per cent., £4 5s. Sulphur: £4 per ton. Benzole: 50 to 90 per cent., 2s. 4d. per gallon. Pitch: £1 12s. per ton.

MANCHESTER CHEMICALS AND DRYSALTERIES, June 30.—The stock takings at the close of the half year cause business to be of a hand-to-mouth character, but, notwithstanding this, the market here is steady. Heavy chemicals are still without change, but bleaching powder has a drooping tendency. Sulphate of ammonia is again a point lower, and lime salts are dull. Sulphate of copper is being booked at £17 10s. for best brands delivered here. Manganese is very scarce, and is 10s. per ton higher for finest ground, *f.o.b.*, Manchester, the quotations being: 70 per cent., £6 10s.; 80 per cent., £7 10s.; 85 to 87 per cent., £8 10s. per ton. Arsenic remains scarce at late rates. Naphthas are variable, miscible being 3s. 6d. per gallon, and solvent wood, 2s. 11d. Acids are in better demand, but cream of tartar is unchanged. Bicarbonate of soda: £6 to £6 5s. per ton, casks; £6 15s. for 1-cwt. kegs. Industrial bicarbonate (for mineral waters): £4 5s. per ton, bags; £5 10s. £5 ton, 1-cwt. kegs. Alum firm at £5 per per for loose lump, £5 2s. 6d. lump in tierces, ton 12s. 6d. ground in bags. Sulphate of alumina: £4 15s. *ex* warehouse, casks. Green copperas, Lancashire make, in strong inquiry, and closing with upward tendency. Yellow prussiate very firm at 7½d. Aniline salts: 6⅝d. to 6¾d.; aniline oil, 7d. to 7¼d. per lb. Carbolic and benzols easier on the whole.

LIVERPOOL MARKET REPORT, July 1.—Canary seed is much easier in price, and about 4000 bags of Turkish have found purchasers at 24s. to 25s. per 464 lbs. Kola nuts are plentiful and low in price; 25 baskets of fresh sold at 2d. per lb., and 70 bags dried at 2¾d. to 3d. per lb. Ginger: African, principally Sierra Leone, is in fair demand; 210 bags have sold at 19s. per cwt. Carnauba wax: Yellow brings 120s. per cwt., and grey 90s. Beeswax: A small quantity of Peruvian brought £7 15s. per cwt., and 8 bollots Gambia £7 10s. per cwt. Castor oil: Stock in store is small, and sellers only offer small amounts of good seconds, Calcutta, at 3d. per lb.; French, first pressure, and Madras at 2⅝d., and Belgian to arrive at 2⅜d. Olive oil is in somewhat limited demand, but prices are sustained, £28 to £35 per tun, with Spanish oils in favour. Linseed oil: Liverpool makes, 18s. 6d. to 19s. 6d. per cwt. in export casks. Cottonseed oil: Steady at 16s. 3d. to 17s. per cwt. for Liverpool refined, and 16s. 9d. for American. Spirits of turpentine is selling fairly at 20s. 3d. per cwt. Petroleum is unchanged. Russian, 5¾d. American, 6¾d. to 7½d. per gallon. Salammoniac: 37s. per cwt.; 2nds, 35s. Carbonate of ammonia: 3⅛d. per lb. Sulphate of ammonia: £8 5s. per ton. Bleaching powder: £7 to £7 2s. 6d. per ton. Copperas: Lancashire, 37s. per ton; Welsh, 35s. Sulphate of copper: £17 10s. per ton. Potashes: 20s. 9d. per cwt. Pearlash: 35s. per cwt. Cream of tartar is quiet, being held for 100s. per cwt. Chlorate of potash: 4½d. to 4⅝d. per lb. Saltpetre: 23s. 6d. per cwt. Prussiate of potash: 7½d. per lb. Bichromate of potash: 4⅝d. per lb. Caustic soda: 70 per cent., £7 7s. 6d. to £7 10s. per ton; 60 per cent., £6 7s. 6d. to £6 10s. Bicarbonate of soda: £6 15s. per ton. Soda crystals: £2 7s. 6d. to £2 10s. per ton. Nitrate of soda: 7s. 9d. to 8s. per cwt. Borax: 20s. per cwt.; powder, 21s. Hyposulphite of soda; £5 10s. to £6 per ton.

Advertisements in the Pharmaceutical Journal.

ALL ADVERTISEMENTS must be sent to the Office, 5, Serle Street, Lincoln's Inn, W.C., where replies to prepaid advertisements may be addressed, and will be redirected free of charge. Postal Orders should be made payable at Lincoln's Inn, W.C., to STREET BROS. Cheques should be crossed "London Joint Stock Bank."

PREPAID ADVERTISEMENTS.—Advertisements of Assistants Wanted, Apprenticeships, For Sale, Partnerships, Businesses for Disposal, Businesses Wanted, and Premises to Let are charged as follows:—Fifty words or less, 3*s.* 6*d.* Each additional ten words or less, 6*d.*

MAXIMUM DOSES OF SOME OF THE NEWER REMEDIES*

COMPILED BY A. SCHREIBER, OF NEUKIRCH.

(*Concluded from p.* lxxviii.)

	Dose (Gm.).	
	Single.	Daily.
Iodopyrine	1·0	4·0
Lactophenine	1·0	5·0
Lupetazine	1·0	4·0
Lycetol	0·5	2·0
Lysidin	1·0	5·0
Malakin	1·0	6·0
Methacetin	0·5	2·0
Methylacetanilid	0·3	1·5
Methylal	1·0	5·0
Migranin	0·75	3·0
Tannigen	0·5	2·0
Terpinol	0·5	1·0
Tetronal	1·0	4·0
Thermodin	0·5	2·0
Thyroidin	0·05	0·5
Tinct. Naregamia alata	1·0	4·0
Trional	1·0	5·0
Tussol	0·5	2·0
Uralium	2·0	8·0
Urethan	1·0	4·0
Urecidin	1·0	5·0
Uropherin	1·0	5·0
Zinc Bromide	0·25	0·5
Salicylate	0·1	0·5

* Reprinted from *Merck's Market Report.*

NEW IDEAS.

TABLOIDS FOR TRAVELLERS.

At this time of the year when a great number of tourists and travellers are, or will be, crossing to the Continent and America, Messrs. Burroughs, Wellcome, and Co.'s new tabloids of chloralamid and potassium bromide, containing 5 grains of each drug, should prove of special value. This combination contains members of two different hypnotic groups, the one reducing temperature and conducing to hypnosis when the disturbing influence is due to pyrexia, and the other tending to diminution of cerebral hyperæmia. The combination has been recommended as a powerful hypnotic in the treatment of many forms of insanity, especially acute mania, and has met with considerable success in diminishing the violence and shortening attacks of sea-sickness. Directions for use in sea sickness are placed on the bottles.

APENTA—A NEW MINERAL WATER

The rapidity with which this aperient water has acquired popularity is remarkable, and has doubtless been greatly accelerated by judicious advertising. At the same time, the APOLLINARIS COMPANY, which has been responsible for its introduction into this country, seems to have sought in other directions to increase its sale by enlisting the sympathies of the general public and of distributors in its behalf. In the first place, the bottling of a small size to retail at 6*d.* is undoubtedly an advantage which will secure many customers who would not care to pay 1*s.* or 1*s.* 3*d.* In addition, from the retailer's point of view, the article is one which shows a good profit, and the retail price is plainly stated on the label. Chemists who will undertake its distribution amongst the medical men in their district can do so on advantageous terms. In regard to the character of the water itself, it may be said that it is obtained from the Uj Hunyadi Springs, near Buda-Pest, where the bottling is carried on under the superintendence of the Royal Hungarian Chemical Institute, and subject to its approval. Dr. L. Liebermann, the director, has examined the water, and reported favourably upon it. A recent analysis of a sample of the water affords confirmation of the claims made for it—

	Lieber-mann.	Tich-borne.	*Lancet* Analysis.	Recent Analysis.
Sp. gr. at 60° F.	1·0414	not stated	1·039 to 1·041	1·0388
	Grains per Litre.			
$MgSO_4$	24·4968	21·06	23·4	22·87
Na_2SO_4	15·432	18·68	16 32	16·62
$CaSO_4$	1·0989	2·63	trace	trace
Total solids	43·8120	45·23	—	47·8

Grains per Gallon.

$MgSO_4$	1600
Na_2SO_4	1163
Total solids	3346

Grains per Pint.

$MgSO_4$	200
Na_2SO_4	145
Total solids	418

As shown in the above table, the composition in grammes per litre was found to be as follows:— Magnesium sulphate, 22·87; sodium sulphate, 16·62, corresponding to about 200 grains of magnesium sulphate and 145 grains of sodium sulphate per pint, the total solids amounting to about 420 grains. The specific gravity of the water at 60° F. was 1·0388. As will be seen from these figures, the magnesium salt is greatly in excess of the sodium sulphate, and to this fact may be attributed the decidedly bitter, rather than nauseous, taste of the water. Generally it may be said that the water possesses characteristics of a high-class natural aperient water, most effective in its therapeutic action. It is supplied by the Apollinaris Company, Limited, 4, Stratford Place, Oxford Street, London, W.

MISCELLANEOUS NEWS.

BOTANICAL RAMBLE. — The students attending the North of England School of Chemistry and Pharmacy, Newcastle, accompanied by Mr. Merson, Principal, had a very enjoyable outing to Hexham on Race Thursday. Through the kindness of Messrs. Fell and Co. the students had the privilege of seeing over the firm's extensive nurseries, under the guidance of Mr. Peek. Many interesting medicinal plants were seen and examined. The party visited Swallowship in the afternoon by way of the woods, and were afterwards entertained to tea by Mr. J. Pattison Gibson, local secretary of the Pharmaceutical Society of Great Britain.

THE SCOTT-VOGT CHEMICAL COMPANY has been registered in Scotland for the purpose of acquiring and developing in Great Britain, Ireland, Germany, France, and Belgium the patents of Andrew Ross Scott and Adolph Vogt for "improvements in obtaining chlorine," these patents being held by the Scott-Vogt Syndicate. The patentees claim that in this process they have discovered a method of utilising in the manufacture of bleaching powder a larger percentage contained in the salt than any existing process. Comparing this process with the Weldon process, they state that under the latter one ton of salt produces 10 cwts. of bleaching powder, while under the former one ton of salt produces 27 cwts. of bleaching powder, and there is practically no loss of chlorine; what is not got as chlorine in the first instance being recovered as hydrochloric acid, and used again.

Plant, on a small practical scale, producing bleaching powder, has been in operation for a considerable time in the works of the Carntyne Chemical Company, Limited, at Parkhead, Glasgow, where it is at present working. It has been examined by Dr. John Clark, public analyst for Glasgow and for Lanarkshire and Renfrewshire, and also by Mr. J. B. Readman, of Messrs. Tatlock, Readman and Thomson, public analysts, Edinburgh and Glasgow, who have reported on the results most favourably. The distinctive features claimed for this process are that practically the whole of the chlorine contained in salt can be converted into bleaching powder; the working of the apparatus is simple, requiring little labour and no mechanical appliances except the necessary pumps for elevating the acids; the process is continuous and when started is practically automatic, and the wear and tear of the plant is very slight, representing only a small percentage on the cost of production.

From the results obtained during the working of the plant at Parkhead it has been calculated that the cost of bleaching powder by this process will not exceed £4 per ton. Taking the cost of bleaching powder at £4 per ton and the present market price of £7 per ton, there remains a margin of £3 per ton, which on an output of 20 tons per day, or say, 6800 a year, will amount to £20,400, available for administrative expenses and dividend. It is stated that the apparatus can be readily adapted by papermakers and other large consumers, who may wish to erect an installation in their works for the production of their own requirements of bleaching powder. It is further stated that owing to the purity of the chlorine produced by this process, it is specially suitable for condensation into liquid chlorine, for which there is a demand in the gold fields of Australia, America, and Africa for gold-extracting purposes.

MIDLAND PHARMACEUTICAL ASSOCIATION.—At a council meeting of this Association held at Mason College on June 24, the following appointments were made:—

President, Mr. F. J. Gibson, of Wolverhampton
Vice-Presidents, Messrs. J. Poole and J. Barclay B.Sc.
Hon. Treasurer, Mr. F. H. Prosser.
Hon. Librarian, Mr. J. Barclay.
Hon. Secretary, Mr. C. F. Jarvis.

LITERATURE AND ART.—The following letter has been received by Dr. Walter Ince, who is now in Trinidad, and thinks it may be of interest as a specimen of English as it is written:—

PORT OF SPAIN.
7, 5, 96.

Very Respectful Sir,

May you for one moment patiently read this.

According to what had been done among imposters in the Colony has made the Gentry let the innocent suffers for the guilty.

I solemnily declare to you that I am not one, for really if I was not driven by total destitution I would not have succumb'd to such a deed being a very delicate one, and causes me to feel asham'd.

If I did not deem you a Gentleman and one to the letter I would not herein expose myself to you.

I therefore solicit from you the kind aid and assistance from your very charitable purse in point of a little pecuniary aid so as to keep me from utter starvation.

And I as in duty bound never shall forget but pray.

Yours very respectfully

P.S.—I have refferences on me to show who I am, my personal character &c.

DEGREE DAY AT VICTORIA UNIVERSITY.—Saturday last was the degree day at Victoria University. The candidates numbered 122, and amongst those who passed with honours in chemistry, first-class, were Charles Thomas Abel, Ernest Harold Bagnall, George Birtwhistle, Frank James Farrell, Robert Henry Jones, Frank Harold Lowe, Richard Thompson Mawdsley, John Kerfoot Wood (all of Owens College), Wm. Augustus Caspari, Ernest Laurence Peck (University College), and John Henry Sugden (Yorkshire College).

EXCHANGE.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Books, etc.

A book of 130 Well-tried Recipes for Chemists and Druggists, comprising well-selected formulæ for general, remedial, veterinary, toilet, and everyday preparations. Post free, 1s. 6d.—Tully, Chemist, Hastings.

Photographic.

A Quick Acting C.D.V. Lens (portrait), Squire, London; no flange. Diameter of Lenses in Focus, 5 inches. Price, carriage paid, 18s. 6d.—G. Jenkins, 29, Hanover Street, Swansea.

"A" Ordinary Kodak, fully charged with spool for 24 exposures. Has been very little used. Cost 26s. Sent, carriage paid, half-price.—"Photo," 'Pharmaceutical Journal' Office, 5, Serle Street, Strand, W.C.

Miscellaneous.

Stramonium plants, have quantity suitable for botanical specimens, price 2s. per doz.—Williams, Longfleet, Poole.

A Trolley on which a boy of eight can easily convey 3 dozen syphons and cases, price 35s. Carriage paid.—Arthur and Co., Chemists, Cambridge.

PHOTOGRAPHIC DARK ROOMS.

[Dark rooms, which are free to customers in most cases, are provided by the following chemists, who also stock photographic materials. Any additions to, or corrections of, the following list should be sent to the Editor.]

ALDERSHOT: E. H. ORANGE, 25, High Street.
ARBROATH: J. S. WHITE, 57, Guthrie Port.
BIRMINGHAM: SOUTHALL BROTHERS AND BARCLAY, Broad Street Corner.
BOSCOMBE: TAME AND CO.
BOURNEMOUTH: S. HARDWICK, 21, Commercial Road.
BOURNEMOUTH: F. E. BILSON, 1, Lansdowne Crescent.
BOURNEMOUTH: WILLIAM JONES, 254 and 256, Old Christchurch Road.
BRAINTREE: ROW AND SON, High Street.
CANTERBURY: E. BING AND SON, St. George's Street.
CHESTER: G. KEMP, 59, Bridge Street.
CHICHESTER: EDWIN THORP.
CLEVEDON: J. H. HART.
CONWAY: L. JONES Lancaster Square.
DUMFRIES: A. TURNER, Buccleuch Street.
HACKNEY, N.E.: W. SHARMAN, 247, Mare Street.
HARROGATE.—A. ATKINSON, 16, Regent Parade.
LANCASTER: WYATT AND CO., Stonewell.
IPSWICH: WIGGIN AND SON, 34, St. Matthew's.
KESWICK: T. W. TOWNLEY, Market Square.
LEICESTER: JOHN L. WEST, 3, Market Street.
LONDON: A. D. RAE, 6, Railway Place, Fenchurch Street, E.C.
LOWESTOFT: FRYER AND CO., The Pier Pharmacy.
MANCHESTER: W. MASKLW, 451, Stockport Road.
MIDDLESBROUGH: MIDDLETON AND CO. Chemists, opposite the Grand Hotel.
MIRFIELD: CHARLES CROOK, Easthorpe.
NEWBURGH, FIFE: A. W. SHIRRAS, Dispensary.
RHYL: G. R. LAWRENCE, High Street.
RICHMOND: REX BLANCHFORD, 34, Hill Rise.
RICHMOND (Yorks): WALTON AND CO.
RIPON: H. B. RUDD, 19, Westgate.
ROCHDALE: WILLIAM BAMFORD, 242, Yorkshire Street.
ROTHESAY: W. B. JAMIESON, 64, Montague Street.
SCARBOROUGH: JOHN WHITFIELD, 113, Westborough, and on the Spa.
SOUTHAMPTON: W. MARTIN, 112, High Street.
SOUTHPORT: J. R. CAVE, 52, Nevill Street.
SOUTHPORT: HENRY BALL, 121, Lord Street.
STOKE-ON-TRENT: J. H. ADAMS AND CO., High Street.
TEWKESBURY: A. ENOCH, 124, High Street.
TEWKESBURY: L. L. STROUD, 131, High Street.
TORQUAY.—HOLLOWAY'S London Co-Operative Drug Stores, 34, Fleet Street, and 50, Union Street.
UTTOXETER: A. PARKER, High Street.
VENTNOR, I.W.: J. W. LITTLEFIELD, High Street.
WINDERMERE: R. H. BARKER, 13, Crescent Road.
WORTHING: A. B. CORTIS, 30, South Street.

NEW BOOKS AND NEW EDITIONS.

PHYSICS AND POLITICS. By WALTER BAGEHOT. (Kegan Paul, Trench, Trübner and Co.)

THE STORY OF ELECTRICITY. By JOHN MUNRO. 1s. (George Newnes.)

HOW TO BE WELL: OR THE PRINCIPLES OF HEALTH. By the Rev. J. P. SANDLANDS, M.A. 1s. 6d. (From the Author.)

THE SPAS AND MINERAL WATERS OF EUROPE. By HERMANN WEBER, M.D., F.R.C.P., and F. PARKES WEBER, M.D., M.R.C.P. 6s. (Smith, Elder and Co.)

NITRO-EXPLOSIVES. A Practical Treatise. By P. GERALD SANFORD, F.S.C., F.C.S. (Crosby, Lockwood and Son.)

THE OLD LIGHT AND THE NEW. A book dealing with the Chemistry of Colour and the New Photography. Illustrated. By WILLIAM ACKROYD, F.I.C. 1s. 6d. (Chapman and Hall, Ltd.)

SOILS AND COMPOSTS: A Practical Treatise, by M. GEORGES TRUFFAUT. (M. Octave Doin, 8, Place de l'Odéon, Paris).

PERSONAL.

MR. ROBERT RAILTON HALLAWAY, son of Mr. John Hallaway, pharmaceutical chemist, Carlisle, and local secretary of the Pharmaceutical Society, having passed his final examinations, was admitted to the degree of Bachelor in Science of Durham University on June 23. Mr. R. R. Hallaway is a registered Student of the Pharmaceutical Society.

MR. PROSPER H. MARSDEN, pharmaceutical chemist, has been appointed lecturer in pharmacy and assistant lecturer in materia medica at the School of Pharmacy in connection with University College, Liverpool.

LATE ADVERTISEMENTS.

Assistants Wanted.

MIDDLE of July. ASSISTANT. Good address. 21 to 25. Out-door. Particulars and salary required to 95, St. James St., Liverpool.

CHINA.—Wanted, an ASSISTANT, not over 30 years of age, accustomed to first-class Retail and Dispensing business. References must bear strict investigation. 4 years' agreement. Passage paid both ways. Address, with full particulars, CHINA, care of A. S. WATSON & Co., Ltd., 8, Fenchurch Buildings, E.C.

DIARY OF THE WEEK.

Secretaries of Societies are requested to send notices of forthcoming meetings not later than Wednesday in the previous week.

WEDNESDAY, JULY 8.

PHARMACEUTICAL SOCIETY.
Library, Museum, School and House Committee.

ABERDEEN CHEMISTS' ASSOCIATION.
Annual Excursion.

COMPANY BUSINESS.

MEDICO, LIMITED, is the name of a company which was registered on June 3, with a capital of £15,000, in £10 shares, to acquire the business carried on at Blackburn as "Meadowcroft and Law," to enter into an agreement with J. Law, and to carry on the business of chemists, druggists, and manufacturers of, and dealers in, mineral and aerated waters and other drinks.

KIRK'S DRUG STORES, LTD.—This company was registered on May 21 by Waterlow and Sons, Limited, London Wall, E.C., with a capital of £1500, in £1 shares. Objects: To acquire and carry on the business of a chemist, druggist, and patent medicine vendor, carried on by William Kirk, at 61 and 63, Heaton Road, and 96 and 98, Falmouth Road, Newcastle. Registered without articles of association. Registered office, 63, Heaton Road, Newcastle-on-Tyne.

J. M. CROSBY, LIMITED.—This company was registered on June 17, by Waterlow Brothers and Layton, Limited, Birchin-lane, E.C., with a capital of £6000 in £5 shares. Object, to acquire and carry on the business of wholesale chemists and druggists carried on by the executors of the late J. M. Crosby at Scarborough, and also the business of chemist and druggist carried on by R. Gilchrist at 1, Gladstone Road, Scarborough, and to enter into a certain agreement. The directors are G. A. Smith, J. H. Delday, J. Stephenson, and R. Gilchrist. Qualification, £50. Remuneration as the company may decide.

EDINBURGH PHARMACY ATLETHIC CLUB.—The Golf Section held their monthly competition on the Braids for the "Dick" Handicap Challenge Medal on June 26 and 27. Mr. J. Greig was again the winner with the score of 92 less 2=90.

MARKET REPORT.

[*Specially compiled for the Pharmaceutical Journal.*]

[*The quotations here given are in all cases the lowest net cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.*]

LONDON, JULY 9.

There are few changes in the chemical market this week. Carbolic acid is tending easier, sulphate of copper is quiet, whilst cream of tartar has dropped back. Citric and tartaric acids are unchanged. Crude camphor is quiet but steady, and no change has occurred in refined camphor since our last report. Menthol is unchanged, whilst glycerine is firm. The drug sales passed off to-day very quietly, the only important changes being an advance in both varieties of ipecacuanha, which looks like being dearer. Dragon's blood is very firm, Jamaican beeswax a trifle easier, whilst gamboge is selling at easier rates. Jalap is tending lower, but tolu balsam and colocynth are firm. There is nothing of importance to note in the essential and fixed oils markets, whilst shellac has declined in value considerably. Full details will be found below:—

ACACIA (GUM).—The market for all varieties remains very flat without any business of importance. To-day about 124 packages were shown, amongst them being an unusually large amount of *Trieste* gum, but not a single lot changed hands. Picked *Trieste* gum was bought in at £7 5s. for pale grain, £7 10s. for medium yellowish, and £10 10s. for fine pale, whilst *Mogador* was withdrawn at 70s. per cwt. *Bushire* Insoluble gum is almost unsaleable, owing to the extreme price asked, fine picked being held for 22s. to 25s., good sorts for 18s. to 20s., and block for 8s. to 12s. per cwt.

ACID, TARTARIC—Quiet. Makers of *English* acid still quote 1s. 3d. per lb., whilst *foreign* brands of acid, both in *crystal* and *powder*, offer at 1s. 2d. to 1s. 2¼d. per lb. At the drug sales three bags of Cape *Argol* sold at 42s. for grey and 57s. 6d. to 60s. for pinkish.

ALOES.—An average supply was offered amounting to about 300 packages. Of these, *Cape* aloes, which was represented by 35 cases, sold at fairly steady rates, 24s. 6d. to 25s. being paid for bright hard, 22s. to 23s. for fair ditto, slightly drossy, and 20s. for ordinary seconds. Of *Zanzibar* aloes, 5 cases of fair soft in skins sold at 55s. to 60s., subject to approval. No *East Indian* aloes was sold, 20 kegs of fair brown being bought in at 85s. per cwt. A good demand was show for *Curacao* aloes, of which about 70 boxes sold at 30s. to 35s. for medium to fair brown liver, and 14s. to 16s. for ordinary drossy dark. Sixty-nine gourds realised 12s. per cwt. for ordinary capey quality.

AMMONIACUM (GUM).—No sales were made of this article to-day. Pale almondy drop, part block, was bought in at 50s., whilst 55s. was the buying-in price of two cases of small palish drop, slightly drossy.

ANNATTO SEEDS—Are quite unsaleable. To-day fifty packages were offered and all bought in, good bright *Coconada* at 5d. and ordinary to good *Madras* at 4d. to 5d. per lb.

ANTIMONY.—Steady, but none was sold to-day, when 19 cases of crude *Japan* were bought in at £9 15s. per cwt.

BENZOIN (GUM).—The market is very quiet, and but little of the large amount offered to-day changed hands. Of *Siam* gum medium to bold loose almonds were bought in for £35, medium palish loose and blocky almonds for £17, and dark siftings in block for 70s. per cwt., the only case sold being one consisting of fair almonds in bright block, which realised £9 12s. 6d. per cwt. *Sumatra* gum was in but moderate supply, and for the most part was bought in, but four cases of fair seconds, almondy centres with dark sides sold at £6 12s. 6d., whilst £5 was paid for ordinary dull false-packed seconds. The only lot of *Palembang* gum sold was fourteen cases of ordinary seconds, which realised 27s. 6d. per cwt.

BUCHU LEAVES—Are very slow of sale. At to-day's sales about 78 bales were shown. Of these ordinary stalky *round* yellowish leaves sold at 1½d. to 1¾d. per lb., whilst 2½d. was paid for fair greenish ditto. Good green leaves were bought in at 3d. per lb.

CACAO BUTTER—Dearer. At the monthly sales 300 cases (representing 30 tons) of *Cadbury's* make sold at an average of 12⅞d. per lb., against 12⅜d., which was the average June quotation.

CALUMBA ROOT.—None was sold in auction to-day, but prices are fairly steady. Ordinary brown sorts were bought in at 15s., and fair picked yellowish at 45s. per cwt.

CANNABIS INDICA.—Very slow of sale. Ordinary dusty tops were bought in at 2½d., and fair greenish ditto at 3½d. per lb.

CANTHARIDES.—Six cases of fair quality *Chinese* flies were bought in to-day at 1s. 1d. per lb.

CARDAMOMS.—Only thirty-one cases were shown to-day, and none of very good quality. For medium pale 2s. 4d. to 2s. 5d. was paid, 2s. 1d. for ditto yellowish, and 1s. 8d. for ordinary pickings. A single case of *seed* sold at 2s. 9d. per lb.

CASCARILLA.—At the sales a parcel of sound bark sold readily at 45s. 6d. for medium bright quill, and 40s. 6d. to 41s. for fair greyish ditto, rather thin. *Siftings* were bought in at 36s. per cwt.

CASSIA FISTULA.—The market is steady. To-day, 33 bags of medium to bold *Dominica* pods sold at 16s. per cwt., whilst broken wormy *Bombay* were taken out.

CINCHONA.—At the monthly sales held on Tuesday a very moderate catalogue was offered, amounting to little more than half of the last one. There was again a good demand, and the greater portion changed hands at fully steady rates, the average unit being ½d. to ⅝d. per lb. The following were the quotations:—*Ceylon*: *Succirubra*, ordinary to good stem chips and shavings, 1⅜d. to 2¼d.; renewed ditto, 2d. to 2⅝d. *Ledger*: Fair to good natural stem chips, 1⅝d. to 3¼d.; renewed ditto and shavings, 2½d. to 2¾d. *East Indian*: *Succirubra* chips and shavings, fair to good, 1⅝d. to 2d.; quills, 2¼d.; renewed chips and shavings, 1⅝d. to 2¼d. *Officinalis* chips and shavings, 1⅞d. to 3d.; quill bold and extra bold rich, 5d. to 8¾d.; renewed chips and shavings, 1⅞d. to 3½d. per lb. *African*: A few bales sold at 2⅜d. to 2½d. per lb. The next Dutch auctions will be held in Amsterdam, on July 16; the quantity of Java bark at present catalogued amounts to 5416 packages against 5437 packages at the preceding sale. At the drug sales a parcel of *Loxa* and *Huanoco* bark from Paita sold at 7½d. to 8d. for fair quality, 5½d. to 6d. for ordinary, and 2d. to 2½d. for low damaged.

COCA LEAVES.—In spite of a large amount being offered to-day, the majority of which was a new arrival, none changed hands. Fair greenish *Truxillo* leaves were bought in at 1s. 1d. per lb.

COLCHICUM (CORM).—Four bags of this drug, much damaged, sold without reserve at 8s. per cwt.

COLOCYNTH.—The market is firm, but no sales were made to-day. Good *Turkish* apple is held for 2s. 8d., and fair to good *Spanish* for 1s. to 1s. 2d. per lb.

COTO BARK.—Three bales of this drug offered without reserve sold at 1½d. per lb.

CREAM OF TARTAR.—Since our last report a marked change has occurred in this article, which is now very quiet at a decline. Best white *French crystals* now offer on the spot at 97s, whilst for *German* brands of powder, 99s. to 100s. is quoted according to make. At to-day's sales 6 barrels were bought in at 100s. per cwt.

CUBEBS.—To-day 39 bags of small *Bombay* seed slightly mouldy, were boughf in at 32s. cwt., whilst small *Singapire* (with a lot of dust) sold at 19s. 6d. to 22s. per cwt.

CUTTLEFISH.—To-day 130 casks were offered. Of these 80 sold at 3½d. to 3¾d. for good bold white and 2¾d. for fair ditto. A parcel of medium and small broken bone from Penang was bought in, a bid of 1¼d. being refused.

DRAGON'S BLOOD.—Very firm indeed. To-day a case of good bright block sold at £10 per cwt.. whilst saucers were bought in at 95s. to 110s. Five cases of ordinary lump sold without reserve at £4 15s. to £5 per cwt.

ELEMI (GUM).—None was sold to-day, when seventy-one cases was shown. Fair to good *Singapore* gum was bought in at 24s. to 25s. per cwt.

ERGOT OF RYE.—There is little sound *Spanish* ergot available, and high prices are asked. To-day nothing was sold, fair *Russian*, slightly dusty being bought in at 7d., and old wormry *Spanish* at 8d. per lb.

GAMBOGE—Was in small supply and selling cheaply, £8 7s. 6d. being paid for clean damp *Singapore* pipe.

GUAIACUM (GUM).—Three cases of fine bright block were bought in to-day at 3s. 3d. per lb.

HONEY.—At the sales to-day a moderate supply of *Jamaican* honey was offered, and the majority of it was bought in, the only lot sold being two cases of thin brown, which fetched 22s. per cwt. A new

arrival of *New Zealand* honey amounting to 131 cases was offered, and of these 71 sold at 41s. to 41s. 6d. per cwt.

IPECACUANHA.—Very firm, and prices have advanced. At to-days drug sales thirty-five bales of *Rio* (Brazilian) root were shown. A portion of these sold at an advance of 2d. to 3d. per lb. 5s. 4d. to 5s. 6d. being paid for good sound annulated, and 5s. 2d. to 5s. 3d. for fair damaged, part lean. The remainder of the catalogue, amounting to 20 bales was taken out, and it is said that higher prices are expected. A parcel of "Bahia" ipecacuanha amounting to 73 bales was also taken out. *Carthagena* Columbian root sold at an advance of 3d. to 4d. per lb. on the last sale rates, 4s. 3d. being paid for good quality root.

JALAP.—Tending a trifle easier. About 70 packages were offered to-day, and of these 6½d. was paid for sound *Vera Cruz*, 6d. for slightly mouldy ditto, and 5¾d. down to 2d. per lb. for damaged lots, according to condition.

MYRRH (GUM)—Was in small supply, and only four bales sold. For good picked 67s. was paid, with 45s. for siftings.

MUSK.—About 20 tins were offered to-day. Of these two Pile I. blue skin sold at 74s. per oz., whilst 3½d. per oz. was accepted for *trimmings*.

OILS (ESSENTIAL).—*Star Anise* oil is unchanged at 7s. 6d. per lb. on the spot, but there is little business doing. A large amount of *Cassia* oil was bought in at the drug sales, testing 87 to 81·58 per cent. of aldehyde at 8s. to 9s. per lb. Amongst other oils, Bombay *rose* oil was bought in at 3d. per oz. *Eucalyptus* (F. R. and Co.) at 1s. 3d. per lb. *Fennel* at 2s. *Ylang-Ylang* at 3s. 9d. per oz. *Nutmeg* at 4½d. per oz., and *Sandal wood* at 7¼d. per oz.

OILS (FIXED) AND SPIRITS.—*Castor* is steady at unchanged rates, *Italian* oil being quoted at 30s. 9d. to 31s. 6d., *c.i.f.* terms, for best quality. *Cotton* is very firm, and quotations have advanced about 10s., *refined* oil being now quoted at £16 to £16 10s. on the spot, according to brand and package. *Cocoanut* is dull of sale at rather easier rates, *Ceylon* being quoted at £22 7s. 6d. and *Cochin* at £26 10s. on the spot. *Linseed* is again easier, and prices have declined further to the extent of 12s. 6d., the spot quotation for oil in barrels being now £17 12s. 6d. *Rape* is quiet at rather easier rates, *refined* oil being now offered at £23 10s. to £24. *Palm*: *Lagos* still quotes at £20 15s. *Olive* quotes at £29 to £30 for *Spanish*, and £29 for *Spanish*. *Turpentine* is quiet at easier rates, *American spirit* being offered at 19s. 6d. on the spot. *Petroleum* is a trifle easier at 4 15/16d. for *Russian*, whilst *American* is quoted at 5 5/16d. to 5⅜d., and *water white* at 6½d. per gallon.

QUASSIA WOOD.—Twenty-five tons of *Jamaica* wood sold to-day at £5 per ton.

RHUBARB.—Very slow of sale. To-day about 75 chests were shown, and of these only 9 sold, at the following rates:—*Canton*: Medium and bold flat pinkey grey fracture, 1s. 1d.; medium pinky flat, 1s. 2d. *Shensi*: Small round trimmings, 1s. per lb. No *High dried* root was sold.

SARSPARILLA.—*Jamaican* root is firm. To pay three bales of *grey* root were held for 1s. 8d. per lb., whilst 1s. 4d. was paid for native *yellow*. *Honduras* root was bought in at 1s. to 1s. 2d. per lb.

SEEDS (VARIOUS).—*Coriander*: At the spice sales 38 bags of *Morocco* seed sold without reserve at 9s. per cwt., whilst to-day 8s. was paid for 50 bags, also without reserve. *Canary*: *River Plate* seed was bought in at the spice sales at 25s. per quarter. *Star Aniseed*: Twenty cases of broken *China* seed sold to-day at 65s. per cwt. *Sesame*: Three bags from *Manila* sold at 8s. per cwt. *Aniseed*: Thirty-seven bags of *Russia* seed sold in auction at 20s. per cwt. *Fennel*: For twenty-nine bags of *Bombay* seed, 15s. 6d. to 16s. was paid.

SENNA.—The market is very firm, but there is little of good quality avaiiable. To-day 4¼d. was paid for fair greenish, 2½d. to 3d. for medium yellowish, and 2¼d. down to 1¼d. for small yellowish to ordinary dark.

SHELLAC.—The market has been quiet privately, and only a moderate amount of business has been done at the rate of 88s. for *TN Orange* on the spot for cash. At the weekly sales, a fair amount was offered, but the demand was very poor, and the prices paid for *TN Orange* show a decline of 3s. upon the last auction rates, whilst other sorts are neglected. The prices paid were as follows:—*Orange*: Blocky *F.O.S.*, in diamond, 94s. *Second Orange*: Fair bright free, 88s. to 89s.; fair reddish to bright cakey, 85s. to 88s.; fair to good bright red blocky, 82s. to 83s. *Garnet*: Curly *A C* was bought in at 84s., and *J.B.G.* matted at 82s. *Button*: A few cases of flint block *BL2* sold without reserve at 75s. 6d. per cwt.

SOY.—Fifteen casks of fair *Chinese* soy sold at 10½d. per gallon.

SQUILLS.—Very slow of sale. At the drug sales pale "firsts" were bought in for 3d. per lb., whilst six bales brownish "seconds" realised 1¾d. per lb.

WAX (BEES).—A large supply was again offered to-day, but with the exception of *Jamaican* wax there are few enquiries. In this instance a very good demand was shown, nearly the whole amount being sold at £8 to £8 7s. 6d. per cwt. In addition, £8 was paid for bleached *Calcutta*, £6 7s. 6d. for *Madagascar*, and £6 2s. 6d. to £6 5s. for *Zanzibar*. *Cuban* wax was bought in at £6 15s., *Aden* at £5, and *South American* at £7 10s.

WAX (VEGETABLE).—At to-day's drug sales, fair pale *Japan squares* were bought in for 35s. per cwt.; privately 32s. per cwt. is quoted. Greyish *Carnauba* wax sold to-day at 100s. per cwt.

MANCHESTER CHEMICALS AND DRYSALTERIES, July 7.—The market is characterised by great steadiness, and although the exports show a decline as compared with the corresponding period of last year, sellers do not appear to be willing to concede anything in the matter of heavy chemicals. Bleaching powder is lower for export, and the union prices for home consumption vary from £6 15s. to £7. Sulphate of copper has dropped to £16 15s. per ton, best brands delivered here. Recovered sulphur is scarce and firm at £4. Bicarbonate of soda is £6 5s. to £6 10s. for casks, and £6 15s. for 1-cwt. kegs. Industrial bicarbonate (for mineral waters), £4 5s. per ton bags, and £5 10s. per ton kegs on rails at works, Northwich. Sulphate of ammonia has not maintained the rise of last week, and local makes can be had at £7 15s. per ton, on rails, which will make it about £8 Liverpool, as against £8 2s. 6d. on Friday. Soda crystals are dull at 35s. to 40s. per ton, bags, on rails. Alum: Firm at £5 for loose lump, and £5 12s. 6d. ground, in bags. Naphthas are rather firmer. Manganese: Still scarce. Glauber salts: 30s. per ton, bags. Benzols and carbolic acid: Steady.

NEWCASTLE CHEMICAL MARKET, July 7.—The market runs barely to steadiness. Fewer orders for crystal soda are moving, despite the fact of the warm weather causing part scarceness in the make. Sulphur keeps scarce. Prices are practically unchanged and are thus:—Bleaching powder: £6 10s. to £7 10s., according to markets. Soda crystals: 37s. 6d. to 45s., according to markets. Caustic soda: 70 per cent., £7 5s. to £7 15s. Soda ash: 52 per cent., £4 5s. Alkali: 52 per cent., £5. Sulphur: £4 per ton, *f.o.b.* The last six months' shipments from the Tyne, and compared with the same period of last year, are as follows:—

	1895. Tons.	1896. Tons.	Increase. Tons.	Decrease Tons.
Alkali and soda ash	4,286	2,631	—	1,655
Bleaching powder	7,194	5,297	—	1,897
Caustic soda	4 862	4,337	—	525
Manure	6,509	9,538	3,029	—
Soda crystals	3,350	3,365	15	—
Sulphate of soda..	3,551	4,036	485	—
Sulphur	3,525	3,539	14	—
Other chemicals ..	4,775	6,250	1,475	—

LIVERPOOL MARKET REPORT, July 8.—Canary seed is held at recent rates, sales of Turkish, 1600 bags at 24s. 6d. to 25s. per 464 lbs.; Spanish, 45s., and River Plate, 20s. Chillies in good supply, prices made are from 24s. to 32s. per cwt., according to quality for Sierra Leone chillies. Ginger: 250 bags Sierra Leone reported at 19s. per cwt. Kola nuts are still low in price and plentiful, prices ruling from 1½d. to 3d. per lb. for dry, and 2d. for fresh nuts. Guinea grains: 40 bags sold at 14s. 9d. per cwt. Calabar beans: 30 bags found buyers at 1⅜d. per lb. Beeswax: Small lots of Chilian have been disposed of at £7 15s. per cwt., and Gambia, 6 bales at £7 7s. 6d., whilst sun-bleached is selling at £8 5s. per cwt. Gums: Arabic continues idle, with next to no business passing. Hog Tragacanth has sold to small extent at 45s. per cwt. Castor oil is very steady, and holders are firm in their requirements. Calcutta "good seconds" is at 3¼d. per lb. for spot parcels, French first pressure is still offered by a few sellers at 2⅝d., Madras is held at 2½d. to 2¾d., and Belgian, forward delivery, at 2½d. to 2⅝d. Olive oil is firm at recent rates, with good inquiry and small sales, mostly of Spanish oils. Linseed oil is dull and easier in price, Liverpool makes 18s. to 19s. 6d. per cwt. Cotton-seed oil remains unchanged, Liverpool refined at 16s. to 16s. 6d. per cwt., American at 16s. 6d. per cwt. Spirit of turpentine steady at 20s. per cwt. Petroleum: Refined oils are lower in price, but no quotations have been published this week so far. Sal ammoniac: Firsts, 37s. per cwt.; seconds, 35s. per cwt. Sulphate of ammonia: £8 2s. 6d. per ton. Copperas: Lancashire, 38s. per ton; Welsh, 36s. Sulphate of copper: £17 10s. per ton, prompt delivery. Bleaching powder: £7 to £7 5s. per ton.

MISCELLANEOUS NEWS.

The "Farcical" Analysis.—Sir Charles Cameron having expostulated with the North Dublin Guardians on their remarks, as recorded in a recent issue, has been assured by them that their observations were not intended to apply to his analysis, but to the storekeeper's test, which they admitted it was now clear could not be relied upon, and was not at all satisfactory.

Liebig's Extract of Meat.—In the Chancery Division, High Court of Justice, before Mr. Justice Kekewich, last week, the Liebig's Extract of Meat Company, Limited, sought to restrain the Chemists' Co-operative Society and the Liebig Medicated Wine Company, Limited, of Bradford, from selling or offering for sale an extract of meat the wrappers of which so closely resembled those used by the plaintiff, with a blue signature across, as to be calculated to deceive the public and lead them to believe that in purchasing it they were obtaining the plaintiff's extract. Mr. Warmington, Q.C., and Mr. C. E. Jenkins appeared for plaintiff, and Mr. Bramwell Davis, Q.C., and Mr. Martelli for the defendants.

The extract manufactured by the company is the well-known article which has now been before the public for over thirty years, known everywhere as Liebig Company's Extract, or the Company's Extract, the distinctive mark being the blue signature of Baron Justus von Liebig across the wrapper and label, while the article sold by the defendant is purchased in bulk, and simply put into jars by him.

Mr. Justice Kekewich, in pronouncing judgment, said the point to be decided was not whether the initiated would be able to detect the difference in the packages, but whether the unwary or casual purchasers would be deceived. The wrappers were practically of the same colour, packages of the same size, and the signature of both in blue, and while it was open to any one to choose what colours or sizes they liked, he could not help thinking that the get-up of the defendants' wrappers was planned to be sufficiently dissimilar to be able to argue a case upon, but sufficiently alike to deceive the unwary. Then as regards its being called the Company's Extract, the plaintiff had overwhelming evidence to prove that their extract is everywhere known under this designation, and the witnesses even on defendants' side had over and over again proved the plaintiff's case on this point. He therefore decided for the plaintiffs on all points, and granted them the injunction with costs.

Retired Chemist and Vaccination.—At the Torquay Police Court last week, Mrs. Milne, wife of a retired chemist, was summoned for not having complied with the order of the magistrates to have her two children vaccinated. The case had been adjourned because Mr. Milne was abroad. Mrs. Milne wished to have the case again adjourned until the arrival home of her husband, who was in America, but declined, regarding her as the custodian of the children under the circumstances. Defendant was fined 6*d.* and 7*s.* 6*d.* costs.

Bacteriology and Agriculture.—Recognising the important part played in public health by certain diseases common to animals and man, and especially with regard to food and milk supply, the Council of the Leicester Bacteriological Institute brought before the notice of agriculturists and dairy farmers facts and information of service with regard to these diseases, and gave those interested an opportunity of seeing for themselves the micro-organisms and their mode of growth, by providing a most complete exhibit at the Royal Agricultural Society's Show this year. The space secured was in a commanding position, and the exhibit formed an interesting and instructive feature at the show. The fact that this was the first occasion on which any such exhibit had appeared in the country drew large numbers of medical men, veterinary surgeons, farmers, members of county councils, and others desirous of obtaining information on the subject. Enlarged photographs illustrating the different bacilli found in tubercle, typhoid fever, anthrax, swine fever, rabies, diphtheria, glanders, tetanus, etc., were arranged upon the stall, and a selection of slides were shown under several microscopes provided for the purpose. Pamphlets giving information concerning the various diseases, and statistics of the results of the latest experiments, were also distributed, and antitoxin serums, prepared in the laboratory of the Institute, were exhibited, whilst demonstrations were given at intervals by the Director (Dr. J. Andrew Turner), when the mode of propagation and the infective properties of the diseases were explained.

Retirement of a Falmouth Chemist.—Mr. W. F. Newman, who has carried on business as a chemist, in Falmouth, Cornwall, for over forty years, has retired, and intends spending the rest of his days with his son, Rev. F. W. Newman, Vicar of St. George's Church, Truro. Mr. Newman is a native of Dorset, and has held many prominent positions in the charming town of Falmouth, and so far back as 1876 was elevated to the Bench. Last week the Falmouth Bench alluded to Mr. Newman's retirement in some very complimentary remarks.

The Wigan Board of Guardians are prepared to receive tenders, and to enter into contract for the supply of drugs required during the six months ending at Christmas, 1896. Forms of tender containing the conditions of contract and probable quantities required, obtained at the Union Offices, 9, Victoria Buildings, King Street, Wigan, on or before July 17. Tenders accompanied by samples of chlorodyne, crushed linseed, cod-liver oil and lint, must be sent by parcels post only, to the Clerk to the Union, 9, Victoria Buildings, Wigan, by 5 p.m. on July 20.

Perry's Powders, Limited.—The first annual general meeting of Perry Powders, Limited, was held at the registered office of the Company, 59, Wade Lane, Leeds, on Tuesday night, when the report and balance sheet were received and adopted, and a dividend of 10 per cent. per annum, free of income tax, was declared on the paid-up capital of the Company, a small balance being carried forward.

Salford Union.—The Guardians of this Union give notice that they are prepared to receive tenders, and enter into contract for the supply of drugs to the Union Infirmary during the twelve months ending June 24, 1897. Particulars from the Steward of the Infirmary, Hope, near Eccles. Tenders must be submitted on printed forms, sealed and endorsed "Drugs," on or before Thursday, July 16, 1896. The Guardians do not bind themselves to accept the lowest or any tender. Tenders must be delivered to Joseph Roberts, Acting Clerk to the Guardians, Union Offices, Eccles Road, Salford.

West Riding Council and Analyst.—At the meeting of this Council on Wednesday, Alderman Sugden, in moving the adoption of the minutes (See this week's *Ph. J.*, p. 38), said Mr. A. H. Allen possessed a world-wide reputation, and went into court with a much greater chance of obtaining a verdict than a man of less experience. Mr. Dunston, who originally raised the question, having also spoken, the recommendation was adopted.

New Pharmacy at Cape Town.—Another large "Pharmacy Hall" has been opened at Green Point, Cape Town, S. Africa, by that enterprising firm, Messrs. Heynes, Mathew and Co. It is situated in a densely populated neighbourhood, where a pharmacy has been much needed for a long time. The establishment, it is interesting to note, will have a registry of nurses, and will be kept in telephonic communication with the medical profession.

A New Triple Alliance.—There appears to be some likelihood that the Irish colleges of physicians and surgeons may agree to a tripartite alliance with the Apothecaries' Hall, on the understanding that "The Hall" will examine in pharmaceutical subjects only.

The Inspector of Food and Drugs is said to have been busy the last few days purchasing samples from a number of chemists in and about Dublin.

New Pharmacy in Tralee.—A well-fitted-up pharmacy has been opened at Bridge Street, Tralee, by Mr. W. D. O'Regan, L.P.S.I.

Appointment of a Dispenser.—Mr. Edward Michael McSweney, L.P.S.I., and Mr. D. Enright, L.P.S.I., competed a few days ago for the appointment of compounder to the Cork Dispensary; both candidates had very high qualifications. Mr. Enright had been for over ten years in Messrs. Harrington and Sons' pharmacy, Mr. McSweney was connected with an old Cork family and was acting as temporary chemist. On a vote being taken 25 voted for Mr. McSweney and 18 for Mr. Enright. The former was declared elected. The post is worth £100 a year.

New Pharmacy at Okehampton.—A new pharmacy is announced to be opened shortly in the Arcade at Okehampton, in which borough at present there is only one pharmacy business.

EXCHANGE.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Books, etc.

A book of 130 Well-tried Recipes for Chemists and Druggists, comprising well-selected formulæ for general, remedial, veterinary, toilet, and everyday preparations. Post free, 1s. 6d.—Tully, Chemist, Hastings.

Maclaren's 'Atlas Venereal Diseases,' coloured plates; 10 6s. parts, perfect, clean condition, 40s., or offers in cash, or counter show-case.—Jepson, Chemist, Sheffield.

Free. Woodville's 'Medical Botany,' 3 vols., 210 finely-coloured plates, 17s. 6d. (pubd. £8 11s. 6d.); 'Pharm. Journ.,' first 15 octavo vols., 15s.; Dr. Barnes' 'Obstetrics,' 2 thick vols., 1884–5, cost 36s., 12s. 6d.—Davis, "Chestnuts," Gordon Hill, Enfield.

Miscellaneous.

Qu'cksilver.—A few 6-lb. bots. for disposal at 1s. 9d. per lb., carriage forward, cash with order.—J. Jinks, Iron Bridge, Salop.

Becker's Balance, 9-in. beam, in mahogany case, slide-up front, 1 milligramme to 50 grammes, with weights, £3 10s.—Fuller, Chemist, Norwich.

PHOTOGRAPHIC DARK ROOMS.

[Dark rooms, which are free to customers in most cases, are provided by the following chemists, who also stock photographic materials. Any additions to, or corrections of, the following list should be sent to the Editor.]

ALDERSHOT: E. H. ORANGE, 25, High Street.
ARBROATH: J. S. WHITE, 57, Guthrie Port.
BIRMINGHAM: SOUTHALL BROTHERS AND BARCLAY, Broad Street Corner.
BOSCOMBE: TAME AND CO.
BOURNEMOUTH: S. HARDWICK, 21, Commercial Road.
BOURNEMOUTH: F. E. BILSON, 1, Lansdowne Crescent.
BOURNEMOUTH: WILLIAM JONES, 254 and 256, Old Christchurch Road.
BRAINTREE: ROW AND SON, High Street.
BUXTON: W. PILKINGTON, 11, Market Place.
CANTERBURY: E. BING AND SON, St. George's Street.
CHESTER: G. KEMP, 59, Bridge Street.
CHICHESTER: EDWIN THORP.
CLEVEDON: J. H. HART.
CONWAY: L. JONES Lancaster Square.
DUMFRIES: A. TURNER, Buccleuch Street.
HACKNEY, N.E.: W. SHARMAN, 247, Mare Street.
HARROGATE.—A. ATKINSON, 16, Regent Parade.
LANCASTER: WYATT AND CO., Stonewell.
IPSWICH: WIGGIN AND SON, 34, St. Matthew's.
KESWICK: T. W. TOWNLEY, Market Square.
LEICESTER: JOHN L. WEST, 3, Market Street.
LONDON: A. D. RAE, 6, Railway Place, Fenchurch Street, E.C.
LOWESTOFT: FRYER AND CO., The Pier Pharmacy.
MANCHESTER: W. MASKEW, 451, Stockport Road.
MIDDLESBROUGH: MIDDLETON AND CO. Chemists, opposite the Grand Hotel.
MIRFIELD: CHARLES CROOK, Easthorpe.
MORECAMBE: J. J. FELL, 59, Queen Street.
NEWBURGH, FIFE: A. W. SHIRRAS, Dispensary.
REDHILL: W. H. FOWLER, 2, Station Road.
RHYL: G. R. LAWRENCE, High Street.
RICHMOND: REX BLANCHFORD, 34, Hill Rise.
RICHMOND (Yorks): WALTON AND CO.
RIPON: H. B. RUDD, 29, Westgate.
ROCHDALE: WILLIAM BAMFORD, 242, Yorkshire Street.
ROTHESAY: W. B. JAMIESON, 64, Montague Street.
SCARBOROUGH: JOHN WHITFIELD, 113, Westborough, and on the Spa.
SOUTHAMPTON: W. MARTIN, 112, High Street.
SOUTHPORT: J. R. CAVE, 52, Nevill Street.
SOUTHPORT: HENRY BALL, 121, Lord Street.
STOKE-ON-TRENT: J. H. ADAMS AND CO., High Street.
TEWKESBURY: A. ENOCH, 124, High Street.
TEWKESBURY: L. L. STROUD, 131, High Street.
TORQUAY.—HOLLOWAY'S London Co-Operative Drug Stores, 34, Fleet Street, and 50, Union Street.
UTTOXETER: A. PARKER, High Street.
VENTNOR, I.W.: J. W. LITTLEFIELD, High Street.
WINDERMERE: R. H. BARKER, 13, Crescent Road.
WORTHING: A. B. CORTIS, 30, South Street.

TRADE NOTES AND NEWS.

THE LIQUOR CARNIS CO., LTD., has just been informed by the Under-Secretary of State for Foreign Affairs that the medals and diplomas awarded to British exhibitors at the Chicago exhibition, 1893, have been sent over by H.B.M. ambassador at Washington, and he is arranging for their immediate distribution.

MESSRS. T. AND H. SMITH AND CO., Edinburgh, intimate that from this date their telegraphic address will be "Meconic," instead of "Smith Company," and will correspond with the telegraphic address of their London house.

MARRIAGE.

WALTON—OLDHAM.—On the 8th inst., at St. Peter's Church, Bromyard, Herefordshire, by the Rev. W. Martin, Joseph Woodruff Walton, Chemist, Higher Broughton, Manchester, to Edith, youngest daughter of the late Thomas Oldham, of Douglas, I.O.M.

PERSONAL.

MR. HENRY DIXON, B.A., pharmaceutical professor of botany, is spending his vacation in the County Kerry.

MR. GIBSON, L.P.S.I., of Belfast, has undertaken the management of Vance's Medical Hall, Charlemont Street, Dublin.

DR. VAUGHAN HARLEY, who has been working at University College, London, for the last three years as assistant to Professor Victor Horsley, has been appointed by the Council of the College Professor of Pathological Chemistry.

MR. J. H. THOMAS, 47, Watergate Street, Chester, has again had his tender for drugs accepted by the Board of Management of the Chester General Infirmary.

SALE OF A CHEMIST'S LIBRARY.—The sale by public auction is announced of the library of the late Dr. Corry, a Belfast chemist and apothecary, who died recently. The volumes, which number many thousands, are considered very valuable.

DIARY OF THE WEEK.

Secretaries of Societies are requested to send notices of forthcoming meetings not later than Wednesday in the previous week.

MONDAY, JULY 13.

ROYAL SOCIETY, at 8.30 p.m.
Reception of Delegates to the Conference on International Catalogue of Scientific Literature.

WEDNESDAY, JULY 15.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION, at 8.30 p.m.
Botanical Meeting at 36, York Place. Demonstration at 9.15 p.m.

SOCIETY OF CHEMICAL INDUSTRY.
General Meeting and Presentation of Society's Medal, 10.30 a.m., Carpenters' Hall, London.
Reception at the Mansion House by the Right Honourable the Lord Mayor, 9.0 p.m.

THURSDAY, JULY 16.

SOCIETY OF CHEMICAL INDUSTRY.
Excursion to Caversham and Windsor, leaving Paddington at 9.40 a.m.

FRIDAY, JULY 17.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION.
Botanical Excursion (last of the season) to Craigcrook Quarry, led by Mr. J. R. Hill. Conveyance from Caledonian Station at 8.20 p.m.

SOCIETY OF CHEMICAL INDUSTRY.
Reception at the Hotel Cecil by the President, 7.0 p.m., followed by Dinner and Smoking Concert.

NEW BOOKS AND NEW EDITIONS.

ON DIABETES, ENURESIS, ETC. By WILLIAM ABBOTTS, M.D. (The Savoy Press.)

THE HYGIENE OF THE SKIN. A code of rules for diet, exercise, the use of baths, soap, etc., in diseases of the skin. By J. T. MILTON. Fifth edition revised. 1s., cloth 1s. 6d. (Chatto and Windus, London.)

WAYSIDE AND WOODLAND BLOSSOMS. A pocket guide to British wild flowers for the country rambler. Second series. By EDWARD STEP, F.L.S. 7s. 6d. (F. Warne and Co., London.)

CRYSTALLOGRAPHY FOR BEGINNERS, with an Appendix on the Use of the Blowpipe and the Determination of Common Minerals (after the method of Dr. Albin Weisbach), by C. J. WOODWARD, B.Sc. 4s. 6d. (Simpkin, Marshall, Hamilton, Kent and Co., London.)

A DICTIONARY OF CHEMICAL SOLUBILITIES INORGANIC. By ARTHUR MESSINGER CORNEY, PH.D. 15s. net. (Macmillan and Co., Ltd., London.)

THE SCENERY OF SWITZERLAND, AND THE CAUSES TO WHICH IT IS DUE. By the Right Hon. SIR JOHN LUBBOCK, Bart., M.P. (Macmillan and Co.)

NITRO-EXPLOSIVES: A practical treatise concerning the properties, manufacture, and analysis of nitrated substances, including the fulminates, smokeless powders, and celluloid. By P. GERALD SANFORD, F.I.C., F.C.S. (Crosby, Lockwood, and Sons.)

MARKET REPORT.

[*Specially compiled for the Pharmaceutical Journal.*]

[*The quotations here given are in all cases the lowest net cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.*]

LONDON, JULY 16.

The produce markets directly or indirectly connected with the drug trade have been quiet since our last report. Carbolic acid is quiet, citric acid very firm, whilst tartaric is steady at unchanged rates. Crude camphor, after a period of quiet, has firmed up somewhat during the last day or two. Amongst other chemicals, cream of tartar is quiet and neglected, copper sulphate rather slow of sale and arsenic firm. Glycerine is firmly held at full rates. Menthol is steady, whilst quinine still attracts but little notice. Amongst the crude drugs the most important feature has been the advance in ipecacuanha root, both varieties of which have sold freely during the week. Tolu balsam is also dearer for good grades, whilst the better grades of copaiba balsam are scarce. Saffron is steady, and the same applies to colocynth. Persian acacia is easier, whilst a good business has been done in coca leaves. There is nothing of importance to note in the spice or oil markets, but it may be said that shellac is again much cheaper. Full details will be found below:—

ACACIA (GUM).—Holders of *Persian* gum seem to have somewhat modified their views, and a good business has been done at easier rates, the current quotations being now 21s. to 23s. for fine pale; 14s. to 16s. for good sorts; 15s. for reddish, and 8s. to 10s. per cwt. for block.

ACID, CARBOLIC.—The market is quiet, and quotations remain generally as last reported:—*Crystals*, 34° to 35° C., 6½d.; 39° to 40° C., 7¼d.; 39° to 40° C. (*detached crystals*), 8d. per lb. *Crude* still quotes at 2s. 1d. for 60 per cent., whilst 75 per cent. is worth 2s. 6d. per gallon. *Liquefied* and *cresylic* are unchanged at 1s. and 11d. per gallon respectively.

ACID, CITRIC.—The market is very firm, although quotations are unchanged. A good business has been done in *English* acid on the spot at 1s. 2d., and there is little to be had under this figure. *Concentrated lemon juice* quotes at £13 5s. to £13 10s. per pipe, *f.o.b.* Messina.

ACID, TARTARIC.—The market is firm, but quotations are unchanged. For *English* acid 1s. 3d. per lb. is still asked on the spot, whilst *foreign* brands, both in *crystal* and *powder*, are quoted at 1s. 2d. to 1s. 2¼d. per lb.

AMMONIA COMPOUNDS.—*Sulphate* is steady at unchanged rates, grey, 24 per cent. being still worth £8 2s. 6d. on the spot, whilst *Hull* quotes at £8; *Leith* at £7 15s., and *Beckton* terms at £8. *Sal Ammoniac* still quotes at 37s. for *firsts*, and 35s. for *seconds* on the spot.

CAMPHOR (CRUDE).—Firmly held. There seems to have been little business done during the week, but holders have advanced their quotations, and whereas 85s., *c.i.f.*, would have been accepted a day or two ago for *Formosan* camphor July to August shipment 92s. 6d. *c.i.f.* is now asked. Sales of *Formosan* camphor at 115s., and *Japan* at 125s. have also been made.

CARAWAY SEEDS.—The market is firm. Good quality *Dutch* seed quotes for delivery at 22s. per cwt. *f.o.b.*

COCA LEAVES.—Since the drug sales a large business has been done privately in both *Ceylon* and *Truxillo* leaves at fairly steady rates.

COLOCYNTH.—There is no change in this article, but the market is very firm. Privately holders still ask 2s. 8d. for good *Turkey* apple, whilst for fair *Spanish* 1s. to 1s. 2d. is quoted.

COAL DISTILLATION PRODUCTS.—*Toluol* is firm at 2s. per gallon for pure. *Benzol* is very strong at advanced rates, 2s. 6d. being quoted for 50 per cent. and 3s. 9d. for 90 per cent. on the spot. *Creosote* quotes at 1⅛d. per gallon. *Crude naphtha*: 30 per cent. at 120° C. quotes at 1s. per gallon. *Solvent naphtha*: 95 per cent. at 160° C. is worth 1s. 6d.; 90 per cent. at 160° C., 1s. 4½d., and 90 per cent. at 190° C., 1s. 1d. per gallon. *Pitch*: 31s. 6d. per ton *f.o.b.* *Tar*: *Refined*, quotes at 1¾d., and *crude* at 2d. per gallon.

CREAM OF TARTAR.—Quite neglected. This article remains practically in the same position as last week, best white *French crystals* being on offer at 96s. to 97s. on the spot, whilst for *German* brands of powder 99s. to 100s. is quoted. For shipment from Bordeaux 92s. *f.o.b.* was the last price quoted.

GALLS.—A moderate business in *Persian* galls, *blue* and *green* varieties, at unchanged rates is reported, whilst *whites* are quite neglected. The current quotations are:—*Blues*, 51s. to 53s.; *greens*, 42s. to 45s.; *sorts*, 48s. to 50s., and *whiees*, 38s. to 43s. per cwt. *Chinese* galls are quite a dead letter.

GINGER.—*Cochin* root is still dull of sale and only a small proportion of the catalogue sold; but prices are fairly steady. For ordinary brown rough root 36s. to 39s. was paid and 35s. for ordinary washed. Native sorts sold at 67s. for ordinary *A* quality. *Jamaican* root sold at steady to dearer rates, 93s. to 100s. being paid for good bright washed and 80s. to 87s. 6d. for fair ditto, whilst medium small and brownish sold at 72s. to 78s. per cwt.

GLYCERIN—Remains extremely firm at from 70s. to 75s. for 1·260 *German* brands. Second-hand holders accept a trifle less.

GUARANA—Is slow of sale, and for fair sausage 2s. 3d. per lb. would be accepted.

IPECACUANHA.—This article has attracted a considerable amount of attention during the week, and large business has been done at advanced prices. *Rio* (Brazilian) root has sold at prices ranging up to 6s. for good quality and to-day it was said that 6s. 2d. had also been paid. *Carthagena* (Columbian) root has sold at 4s. 5d. per lb., and this figure has been refused to-day.

KOLA NUTS.—It is said that a good business has been done during the week in undried nuts at 2s. per lb., and that this kind is now scarce.

MENTHOL—Is quiet, and quotations range nominally from 10s. to 10s. 6d. per lb. on the spot, according to brand.

OIL (COD-LIVER).—The London market is naturally quiet at the present time. The current quotation for fine new season's *Lofoten* oil is 180s. per barrel. Other grades quote at 155s. to 165s.

OILS (ESSENTIAL).—*Star Anise* oil is firm with nothing offering under 7s. 6d. per lb. on the spot, whilst 5s. 11d. *c.i.f.* is quoted for October to December shipment, 6s. 6d. for July to August ditto, and 6s. 3d. for September to October ditto. *Cassia* oil remains quiet, 5s. per lb., *c.i.f.* terms, being quoted for 70 to 75 per cent. oil, July to August shipment. *Patchouli* is tending higher, 1s. 3d. to 1s. 6d. per oz. is now asked on the spot, according to quantity. It is said that, generlaly speaking, twenty-five to thirty per cent. higher prices may be expected for the new season's *French* essential oils, the quotations for which will be generally known in about three weeks' time.

OIL (FIXED) AND SPIRITS.—*Cotton* is very firm at slightly advanced rates, £16 2s. 6d. to £16 10s. being now quoted on the spot for *refined* oil according to brand and package. *Coconut* is firm, *Ceylon* being quoted dearer at £22 15s., whilst *Cochin*: Unchanged at £26. 10s. on the spot. *Linseed* is again easier by about 12s. 6d., and the spot quotation for oil in barrels is now £16 17s. 6d. to £17 on the spot. *Rape* is quiet at unchanged rates, *refined* oil being quoted at £23 15s. to £24 on the spot. *Palm*: *Lagos* still quotes at £20 15s. *Olive*: *Spanish* quotes at £29 to £30, and *Levant* at £29 on the spot. *Turpentine* is dull of sale at easier rates. *American* spirit being offered at 19s. to 19s. 1½d. on the spot. *Petroleum* is quiet at 4⅞d. to 4⅝d. for *Russian*; 5¾d. for *American*, and 6½d. for *water white*.

OPIUM.—The London market is very firm, and quotations are from 3d. to 6d. dearer for *Turkish* opium, the prices being as follow:—*Soft shipping*, 12s. 6d. to 13s.; *Smyrna*, 9s. 6d to 10s. 6d.; *Constantinople*, 9s. 6d. to 10s. 6d.; and *druggists' seconds*, 9s. 6d. to 10s. *Persian* is firm, and quotations range from 11s. 9d. to 12s. for good qualities, whilst ordinary grades offer at 10s. 6d. to 11s. per lb.

OPIUM ALKALOIDS.—The market is very firm and although no change has taken place in the quotations, in view of the present position of the opium market, an advance is not unlikely.

PERU (BALSAM)—Is very quiet and still quoted at 8s. 3d. to 8s. 6d. per lb. for genuine quality on the spot.

QUININE SULPHATE—Is quite neglected, and still quotable at 12½d. per oz. for the best brands of *German* quinine.

SENEGA.—A report from America states

that the present price of the root is so low that its collection has ceased to bear any profit, and will be discontinued to a considerable extent.

Shellac.—The market is again lower. Privately, a small business has been done at late rates, but business is very quiet. At the weekly sales the greater portion of the catalogue consisted of *TN Orange*, which sold at a further decline of fully 3s. on last week's sale prices, the current quotations being now 84s. to 86s. The prices paid were as follows: *Second Orange*, block *AA* in circle, 89s.; fair bright *AA* ditto matted was bought in at 100s. *TN Orange*: Fair bright red flat, 85s. to 86s.; good bright, 87s. down to 78s. to 81s. for block. *Garnet* was all bought in; fair free *PBG* at 84s. Privately *AC* is quoted at 83s. per cwt.

Spices (various).—*Cassia lignea*: On the spot 32s. is quoted, whilst for arrival 32s. 6d., *c.i.f.*, is still quoted. *Pimento* remains very firm, and the auction rates show a firmer market, 2⅝d. being paid for low grey, 2⅞d. for medium, 2¼d. for fair, with a few lots at 2⅝d. *Capsicums*: Bold long red off-stalk *Calicut* were bought in at 25s. per cwt. *Chillies*: Fine bright red *Japan* were bought in at 56s. per cwt. *Long pepper*; Damaged quality sold at 16s. 6d. per cwt. *White pepper* is dull of sale. In auction *Penang* was bought in at 3½d., and *Singapore* at 4d., whilst fine bold ditto sold at 5d. per lb. *Arrowroot* was bought in at 2½d. for *St. Vincent*.

Sticklac—Is quiet. Small dusty *Calcutta* sold without reserve in auction for 40s. per cwt.

Tolu (Balsam).—The market is firmer. Business has been done privately in genuine balsam at 2s. 8d. per lb. during the week, and the holder has only a few more cases available at this figure.

Turmeric — Continues slow of sale. *Cochin* bulbs were mostly bought in at the sales, but a few bags sold at 5s. 3d., whilst rough fingers were bought in at 8s., and rough small bulbs at 6s. per cwt.

Newcastle Chemical Market, July 14.—This chemical market for the moment is quieter, owing to a lessened export, which is somewhat exceptional for the time of year. Baltic shipping is general, yet the outflow moves slowly. Prices are unchanged in a great measure, still late figures are fully maintained, thus:—Bleaching powder: £6 10s. to £7 10s., according to markets. Soda crystals: 37s. 6d. to 45s. Caustic soda: 70 per cent., £7 5s. to £7 15s. Soda ash: 52 per cent., £4 5s. Alkali: 52 per cent., £5. Sulphur: £4 per ton.

Manchester Chemicals and Drysalteries, July 14.—Although the Board of Trade returns show decreased exports, the demand for home consumption continues steady, and it is now officially known that current rates for heavy chemicals will continue in force by the United Alkali Company until the end of September next. Meantime the value of high strength caustic soda is well maintained, and chlorate of soda is fairly steady. Bleaching powder is dull, and varies from £6 10s. to £7 5s., according to delivery. Sulphate of copper is down to £16 15s. in some instances, although £17 to £17 10s. may be looked upon as the current rates. Brown acetate of lime is firmer, and is quoted £4 5s. to £4 10s. for Welsh, delivered station Manchester. Ammonia alkali, 58 per cent., £3 7s. 6d. per ton in bags, on rails. Bicarbonate of soda: £6 5s. per ton, casks; £6 15s. 1-cwt. kegs. Industrial bicarbonate (for mineral waters): £4 5s. per ton. £5 10s. per ton (one cwt. kegs), all on rails at works, Northwich. Recovered sulphur advanced to £6 and £4 2s. 6d. Chlorate of potash dull at 4½d. to 4⅝d. Alum firm at £5 per ton for loose lump, and sulphate of alumina, £4 12s. 6d. to £4 17s. 6d. ex-warehouse, here. Green copperas (best Lancashire) is in brisk enquiry and firm at 33s. per ton alongside ship, Manchester Docks; 38s., *f.o.b.*, Liverpool. Glauber salts dull at 23s. 6d. per ton in bags, on rails; Epsoms, 63s. to 65s. Sal ammoniac unchanged.

Liverpool Market Report, July 15.—Canaryseed: There is a very steady tone as regards Turkish, for which the price is somewhat against buyers, viz., 25s. per 464 lbs., at which 1000 bags have been sold. Honey: 60 cases of Californian honey disposed of at 25s. per cwt. Carnauba wax.—Grey is selling at 87s. 6d. per cwt. and good yellow at 120s. Beeswax: A small lot of Gambia, 10 bales, found purchasers at £7 5s. per cwt. Kola nuts: Dried nuts bring 2d. to 2½d. per lb. and some old fresh have been sold at 1½d. per lb. Cochineal: Good black grain, Teneriffe, is firmly held for 1s. 3d. to 1s. 3½d. per lb., at which prices small sales have been made. Gum: Acacia is a little more in demand but no sales are reported. Castor oil is still very firm in price, Calcutta at 3¼d. per lb.; French on the spot is non-existant; Madras is held by some at 2⅞d., with a few sellers at 2⅛d., and Belgian to arrive is offered at 2½d. to 2⅝d. per lb. Olive oils continue steady, with sales of Seville reported at £29 per tun, and Syrian at £28 10s. Linseed oil: Liverpool makes on the decline, 17s. 3d. to 19s. 6d. per cwt. Cotton seed oil is reduced 3d. per cwt., and is now 15s. 9d. to 16s. 3d. per cwt. Spirit of turpentine: Steady at 19s. 9d. per cwt. Petroleum: Russian refined, 5½d. to 6¼d.; American, 7½d. per gallon. Sal ammoniac: 35s. per cwt., seconds; 37s. per cwt., firsts. Carbonate of ammonia: Lower at 3⅜d. per lb. Bleaching powder: £7 to £7 2s. 6d. per ton. Copperas: Lancashire, 37s. per ton; Welsh, 35s. Sulphate of copper: £16 10s. to £16 15s. per ton. Potashes: 20s. 3d. to 20s. 6d. per cwt. Pearlash: 35s. per cwt. Cream of tartar: Is steady at 100s. per cwt. for finest white. Saltpetre: 23s. 6d. per cwt. Prussiate of potash: 7½d. per lb. Chlorate of potash: 4½d. per lb. Caustic soda: 70 per cent., £7 7s. 6d. to £7 10s. per cwt.; 60 per cent., £6 2s. 6d. to £6 5s.

Curious Accident at a Chemist's.—A singular accident occurred at Weymouth on Monday evening last, when a cab horse, frightened by an elephant belonging to Bostock's wild beast show, swerved suddenly, and dashed its head through one of the windows of Mr. E. M. Smith's pharmacy, smashing a large pane of glass, and damaging or destroying a quantity of scents and other valuable goods in the window. It is stated that Mr. Smith had his window insured against accident.

MISCELLANEOUS NEWS.

The Supply of Expensive Medicines in Unions.—Early in May last the guardians of Neath Union passed a resolution that the supply of expensive medicines should be supplied by the local chemists instead of the medical staff, as heretofore. It arose out of an account sent in for such medicines by Dr. J. Hopkin Davies, one of the medical officers. That gentleman wrote a remonstrance, and pointed out that the scheme could not be carried out; that in his district—a scattered one—in several places there was no chemist; and in his own locality, at Taibach, where a chemist had a branch, there was no resident chemist. Further, he said that a grave responsibility would rest upon someone if, in a case of emergency, prescriptions could not be dispensed owing to this prohibition. In view of its being unworkable, the Rev. Jno. Foulkes gave notice to rescind the resolution, and at the last meeting of the Board he made his motion. In doing so he pointed out that the new scheme would prove unworkable in outlying places where there was no resident chemist. In cases of urgency they must not consider the cost so much as the life of the patient, and in these instances he thought the authority to supply expensive medicines should be vested in the medical staff. Mr. Wm. Jones seconded the motion. Mr. Llewellyn Howells opposed on the ground that it was undesirable to rescind a resolution so recently passed, and that after due deliberation. Mr. Edward Davies assumed that medical men did not carry expensive medicines in their pockets when going to out-lying districts, but supposed they had to return home to dispense their prescriptions. Dr. D. Ll. Davies, Medical Officer for Neath, said, as a matter of fact, doctors when visiting such places carried medicines with them, and dispensed on the spot. Mr. Isaac Evans disagreed with an early change in a matter so thoroughly discussed in committee, and when they had a medical officer to help them in arriving at a conclusion. His knowledge of the bills of medical men was that they charged as much for cheap medicines as those which were dearer. Mr. Rees Thomas thought if a doctor charged the same as a chemist the change might be acceptable. Mr. Wm. Howell said that the proposal to give these orders to local chemists followed on a recommendation of the Finance Committee in consequence of charges made by medical men. He understood Dr. Davies was going to fight this question with the Board; and it occurred to him (the speaker) whether the Board was to rule or the medical man. He said this effort to disturb the resolution was an affront to the Finance Committee; but if found after a six months' trial to be unworkable then they could reconsider the whole question. Mr. J. F. Bucham, Poor Law Inspector, said the guardians should not tie the hands of their doctors; and in the case of emergency the medical staff should fully understand that they were permitted to act. Mr. S. C. Price moved that the following words should be added to the resolution of May 11:—"except where no chemist lives in the immediate district, and in cases of emergency." Rev. John Foulkes seconded the motion, which was carried *nem. con.*

MESSRS. EVANS, GADD AND CO.'S EMPLOYÉS' OUTING.—The male employés of the firm of Messrs. Evans, Gadd and Co., wholesale druggists, of Fore Street, Exeter, held their annual outing on Saturday week, Ashburton and the district (one of the most picturesque places on the borders of Dartmoor) being the rendezvous selected. A party of between sixty and seventy, including the principals of the firm, left St. David's station by the 8.40 train, special carriages being provided by the Great Western Railway Co. for the convenience of the pleasure seekers. Arriving in due course at Ashburton, the party made all haste to the Golden Lion Hotel, where host Sandye's capital lunch soon vanished, and breaks being in readiness, a start was made for Holne Chase, the lovely seat of the Hon. R. Dawson. The return journey to Ashburton was by way of the lovely Buckland drives. Reaching Ashburton at three o'clock the company did ample justice to a sumptuous repast served by host Sandye, and on the removal of the cloth various loyal and patriotic toasts were duly honoured. Admiral White, C.B. (of Exeter), the only visitor present, acknowledging that of "The Navy and Army." The toast of "Success to the Firm" was cordially received and was responded to by Mr. Alderman H. Gadd, J.P. (President of the Exeter and District Association of Chemists and Druggists), Mr. H. J. Wippell, Mr. H. Gadd, junr., and Mr. Sidney Gadd, the latter of whom, it might be interesting to note, made his maiden speech. The party afterwards left Ashburton by the 4.50 train for the "Ever Faithful" city—Teignmouth and Dawlish being visited *en route*—and the excursionists separated after having a most pleasant day's outing. The female employés enjoyed a day's outing amongst themselves.

COMPLIMENTARY SUPPER TO MR. C. J. PARK.—At the Plymouth Liberal Club on the 8th inst. a complimentary supper was given to Mr. C. J. Park, the newly elected councillor of the Pharmaceutical Society of Great Britain. The chair and vice-chair were occupied by Mr. R. H. Rendle and Mr. J. G. Netting respectively, both gentlemen being vice-presidents of Plymouth, Devonport, Stonehouse and District Chemists' Association. The attendance included Messrs. J. Cocks, J. H. Bailey, P. A. Kelly, H. Woods, J. W. B. Swainson, S. Perkins, G. Breeze, J.P., W. W. Carveth, C. A. Williams, J. K. Bond, J. A. Lamble, J. Lamble, junr., R. F. Roper, F. W. Hunt, O. A. Reade, R.N., T. Weary, J. Johnson, R.N., J. D. Turney, H. Hearder, Condy U'Ren, W. S. Taviner, and Barber. The company having duly honoured the loyal toasts, the Chairman referred to the recent Pharmaceutical Council election. The local chemists' association had brought forward a good man to represent the west of England, and he was pleased to observe that their candidate had received hearty support throughout Great Britain. It was the first occasion that the western counties had been directly represented, and they felt proud of having promoted Mr. Park's candidature. He asked his colleagues to join him in wishing Mr. Park and the Council to which he belonged a successful future. Mr. Park suitably replied, and Mr. Netting tendered a few complimentary remarks to Mr. Cocks, Hon.-Sec. to the Local Chemists' Association, who headed the poll of the Proprietary Articles Trade Association. Replying, Mr. Cocks called attention to a scheme he had on hand to stimulate education among their younger members, and to mark the occasion of a member of the local association becoming a Pharmaceutical councillor. He said he was desirous of raising the sum of ten guineas voluntarily from members. The sum to be given additionally to any members of their Association who might be successful in gaining the Bell Scholarship. He trusted the idea would commend itself to the members, and would find hearty support. In conclusion he thought the thanks of the Association were due to Mr. Oswald A. Reade, R.N., who had very generously given his time and services in taking the junior members of the Association on botanical rambles. He felt confident that Mr. Reade had materially helped the juniors in a difficult portion of their studies. The evening was made all the more pleasant by the songs and recitations of Messrs. C. Weary, P. A. Kelly, H. W. Woods, R. F. Roper, T. Lamble, J. Johnson, T. H. Bailey, C. A. Williams J. K. Bond, and J. D. Turney. Mr. Lamble, jun., efficiently accompanied on the piano. Messrs. J. H. Bailey and R. F. Roper are to be complimented on the excellent arrangements, and a hearty vote of thanks was accorded them for their energies.

ABERDEEN AND NORTH OF SCOTLAND SOCIETY OF CHEMISTS AND DRUGGISTS.—The annual excursion of the Society took place on Wednesday, July 8, to Glen Tana and Mount Keen. The company travelled by train, leaving Aberdeen at 7.10 a.m. for Aboyne, carriages being in waiting to drive the party to Glen Tana, where they were welcomed by Sir William and Lady Brooks. The drive was then continued up the forest of Glen Tana as far as Corryvraich. Several of the party ascended Mount Keen (3050 feet), while others visited the Linn of Tana. The party returning from Mount Keen encountered a fine specimen of the common adder (*Vipera* or *Pelias berus*), which was killed and carried off as a prize. On the return journey a short halt was made at Glen Tana to examine the fine house and grounds.

On the call of the President, who expressed the hearty thanks of the party, three ringing cheers were given for Sir William and Lady Brooks. The former said it had been a great pleasure to himself and Lady Brooks to see the party enjoying themselves. On arrival at Aboyne, ample justice was done to a sumptuous dinner, purveyed by Mr. Sandison of the Huntly Arms.

Mr. Johnston occupied the chair, and the toast, "The Pharmaceutical Society of Great Britain," was eloquently proposed by Mr. Troup and heartily honoured. At 7.40 p.m. the return journey was started by train from Aboyne, reaching Aberdeen at 9 p.m. The excursion was a great success, thanks to the excellent management of Mr. Cruickshank and his Committee. During the day a number of snap-shots were taken.

MESSRS. POTTER AND CLARKE, 60, 62, and 64, Artillery Lane, Bishopsgate, London, E., announce that they have admitted into partnership, as from March 26 last, Mr. Henry A. Potter, M.P.S., the son of Mr. H. Potter, and Mr. Richard C. Wren, who has for many years been the firm's general manager. The style of the firm will continue as before.

CHEMISTS' CLUB—SUNDAY OUTING.—On July 19 a four-in-hand will leave the Chemists' Club, at 9.30 a.m. for Weybridge, *vid* Putney Bridge. Dinner and tea will be provided there at the Ship Hotel. Applications for tickets should be made at once to the Chemists' Club, 2, Farringdon Avenue.

CURIOUS OUTBREAK OF FIRE AT AN EXETER CHEMIST'S.—About half-past 11 o'clock on Tuesday morning, at the shop of Mr. J. Hinton Lake, chemist, High Street, a quantity of camphorated oil, which was in a vessel close to a gas jet, became ignited, and in turn fired the counter on which it was standing, shelves, and fittings. Large volumes of smoke were emitted, and the body of flame was considerable. The occurrence was, of course, at once noticed by those in the shop, and steps were taken to check the outbreak. Unfortunately, the water supply had been temporarily turned off. Mr. Hoskins, the occupier of adjoining premises, succeeded, however, in turning on the water from the street main, and there being thena plentiful supply, Mr. Lake's employés and willing helpers speedily got the flames under control, and finally extinguished them. The police and fire brigade arrived promptly with appliances, but their use was not necessary. How the oil became ignited is not known; possibly there was evaporation. A good deal of damage was caused, but will be covered by insurance with the Commercial Union. The business will not be interfered with.

THE LIABILITY OF CHEMISTS.—On Monday, in the Record Court, Cavan, an interesting case as to the liability of chemists came before Judge Madden. It appeared from the evidence that in February last two farmers named Burns and Chambers went about ten miles to Cootehill Pork Market, and put their horses into the yard of Mr. Armstrong, chemist. In the middle of the day they asked for a drink for the horses, and were directed by a man in charge to a barrel, from which their horses drank. On the way home both horses died, and an analysis of the intestines of the horses and of the water in the barrel was made by Professor Tichbourne, who found a solution of arsenic in both. The men on leaving the yard paid 2*d.* each. The two cases against Mr. Armstrong for the value of the horses came before Judge Waters at Quarter Sessions. The defendant then gave evidence that the arsenic could not possibly get into the barrel through his neglect, and that he never sold a solution of arsenic. Judge Waters dismissed one case, and adjourned the other pending the result of an appeal. Judge Madden now reversed the decision, and gave a decree for £15 with costs and expenses. Mr. D. S. Henry, Q.C., and Mr. P. C. Gausson, B.L. (instructed by Mr. Chambers), appeared for the appellant, and Mr. R. Dane, Q.C., M.P., and Mr. A. Henry, B L. (instructed by Mr. A. B. Smith, solicitor), for the respondent.

PHARMACEUTICAL EXAMINATIONS IN CANADA.—The Preliminary Board of Examiners held their quarterly examinations for students entering the study of pharmacy, in Montreal and Quebec, on July 2, when twenty candidates presented themselves in Montreal and five in Quebec. Of these, the following candidates passed, and are named in order of merit, namely:—J. Fotheringham, Joseph P. Dobbins, J. R. Laurier, and J. C. Deneault. Mr. J. E. Crack passed upon all subjects but geography, which subject he will require to be examined upon at the next examination. The remainder of the candidates are referred back for further study. The examiners were Prof. A. Leblond de Brumath and Prof. Isaac Gammell, Montreal, with Mr. J. Emile Roy as supervisor in Quebec. The next examination will be held on October 1, intending candidates being required to give the Secretary, Mr. Muir, ten days' previous notice.

THE ANNUAL CRICKET MATCH between teams representing the Wholesale and Retail Departments of Messrs. Reynolds and Branson's was played at Kirkstall on July 6 and 7, which ended in an easy win for the Retail. Score:—Retail, 64; Wholesale, 29. W. A. Fox, and Challoner were highest scorers for the Retail, and H. Goodson and G. Lazenby for the Wholesale.

PHARMACEUTICAL EXAMINATIONS IN IRELAND.—The following have passed the Pharmaceutical Licence examination:—Messrs. R. McK. Wilkin (R. Andrew and E. Byrne equal), H. O'Connor, W. V. Johnston, J. B. Morris, J. Glendinning, C. E. Price, J. J. Fitzsimons. Ten candidates were rejected. The following have passed the Preliminary examination:—Messrs. A. Elliott (W. M. Crofton and N. V. MacDowell equal), W. A. Berry, S. J. Clotworthy, W. E. Stevenson, M. J. Kennelly (D. Barrett and G. W. J. Hawthorne equal), W. Herron, C. F. Fairweather, J. H. Davis. Fourteen candidates were rejected.

MR. JAMES TOWNSEND'S EMPLOYÉS' OUTING.—The employés of Mr. James Townsend, medical label printer, of Little Queen Street and Gandy Street, Exeter, and 2 and 3, Stonecutter Street, London, E.C., held their annual wayzgoose on Saturday at Cardiff. One portion of the party travelled to Weston-super-Mare by a special train placed at their disposal by the Great Western Railway Company, and thence by steamer to Cardiff, while the other section proceeded *vid* the Severn Tunnel. Dinner was served in capital style at the Park Hotel, Cardiff. The principal of the firm (Mr. James Townsend) occupied the chair, the vice-chairs being filled by Mr. W. Townsend and Mr. T. J. Tayler (senior representative). After the loyal toast, Mr. W. Townsend gave "The Navy, Army, and Reserve Forces," which was acknowledged by Sergeant W. Manning and Mr. W. Drew. The toast of the day was that of "Our Worthy Employer and Family" submitted by Mr. Blackmore, who made reference to the kindly interest which Mr. Townsend took in his employés. He also referred to him as the pioneer of shorter hours and increased wages in the trade, and adverted to the new departure this year of employés of over ten years' standing being given a week's holiday. The toast was drunk with enthusiasm, and Mr. Townsend referred to the loyalty of the employés, many of whom had been connected with the firm for many years. Mr. T. J. Tayler proposed "Prosperity to the Firm" in some appropriate remarks, Mr. W. Townsend responding. In giving the toast of "Our Absent Friends" Mr. Townsend made reference to the services of the manager (Mr. W. H. Dalgleish) and the three London representatives, as also to Messrs. Luxton and Cleak. The toast of "The Host" by Mr. Crouch concluded the list, and the company dispersed to visit places of interest, including the Cardiff Exhibition; and the whole of the party returned to Exeter, having spent a very pleasant day.

PERSONAL.

ALTRINCHAM DISPENSARY.—Mr. Joseph Horne, of Seedley, Manchester, a registered chemist, has been appointed dispenser in connection with the above Institution.

DR. CHAS. FORSHAW, D.D.S., F.C.S. Berlin, eldest son of Mr. T. G. Forshaw, of the Infirmary Pharmacy, Bradford, has this week been appointed by the Governors, Honorary Dental Surgeon to the Bradford Deaf and Dumb Institute.

MR. J. A. KNIGHTS, pharmaceutical chemist, of 20, Hornsey Rise, N., has just been gazetted Major in the 1st North York Artillery Volunteers. Major Knights has passed the Senior Army Examination in "Tactics," as well as that in "Artillery." He has also passed through the course for Position Artillery at the Royal Military Repository, Woolwich, where he was awarded a Certificate of Proficiency.

MR. W. F. NEWMAN, chemist, 8, Market Street, Falmouth, Cornwall, who has carried on business in that town for a great number of years, has sold his establishment to Mr. John Blamey, late senior dispenser to Messrs. Pope, Roach, and Sons, chemists to H.R.H. the Prince of Wales.

MISS E. A. KEEN, daughter of Mr. B. Keen, pharmaceutical chemist, of Bristol, has been awarded an Entrance Scholarship in Lady Margaret Hall, Oxford (£50 classics).

MR. A. J. FREELAND, chemist, Kibworth, a well-known musician, succeeded at a recent examination in Leicester, in connection with the College of Violinists, in gaining still further distinction by securing the degree of Licentiate of that institution with honours. One more step will place Mr. Freeland on the very top rung of the violinist ladder, and he will doubtless succeed in reaching that position. Mr. Freeland is the author of various meritorious compositions, both vocal and instrumental, his "Songs of long ago" having gained a wide-spread popularity, and for which there is an increasing demand.

MR. H. A. D. JOWETT, assistant lecturer on chemistry at the Pharmaceutical Society's School of Pharmacy, has been successful at the D.Sc. examination of the University of London.

TRADE NOTES AND NEWS.

STANDAGE'S INK FOR RESERVOIR PENS never clogs up the orifice, but flows freely at the slightest touch. It is non-corrodible on all metals, and thus a steel nib will last as long as a gold-tipped one. As a proof of this non-corrosiveness, the ink is put up in metal bottles, and as regards the indestructible quality of the ink, it is not acted on nor effaced by the strongest acids or alkalies, or even by fire, for when submitted to the last severe test the writing stands out in white from the black charred paper. Another good quality of the ink is that it does not dry up to a muddy mess, like ordinary inks, when exposed to the air. This is a point that should highly recommend the ink to users of reservoir pens, for the popularity of these useful articles is greatly impaired by the waste of time necessitated by pushing and clearing out the clogged-up orifice of the dried-up ink. With Standage's Reservoir Pen Ink, made by H. C. Standage and Co., Erdington, Birmingham, no such trouble is experienced, and the ink flows so evenly and uniformly that it is a positive pleasure to write with it.

THE LIQUOR CARNIS COMPANY originally intended "Virol" to supply a palatable substitute for cod-liver oil, but of itself it has been thought useful as a fat food for infants and young children, and it is used now very largely as an infant's food in a great many children's hospitals, and also by the public. It has an advantage over milk, as it contains iron, and possesses an advantage over nearly all the advertised infants' foods, inasmuch as it contains free fat, strongly urged in the diet of infants by Fothergill and Cheadle.

THE LIQUOR CARNIS COMPANY.—In consequence of recent improvements, by which the raw meat flavour of this Company's preparation has been done away with, holders of stock are requested to return to their wholesale houses any that they may have remaining, in order that it may be exchanged for the improved make and the supply rendered uniform throughout the kingdom.

NEW BOOKS AND NEW EDITIONS.

HOMŒOPATHIC FAMILY INSTRUCTOR. By Drs. R. and W. EPPS. Describes fully, and prescribes for, general diseases. 1s. James Epps and Co., Ltd., 48, Threadneedle Street, London.

DISEASES OF THE BLADDER AND PROSTATE CURED BY THE SPRAY TREATMENT. Seventh edition. (Illustrated.) By DAVID JONES, M.D., Senior Surgeon to Home Hospital for Cure of Stone and Kindred Diseases Without Cutting. Successful and authenticated cures of reputed hopeless cases, with addresses of patients (by permission), 5s.; epitome, 1s. C. Mitchell and Co., 12 and 13, Red Lion Court, Fleet Street, E.C.

LATE ADVERTISEMENT.

Engagement Wanted.

TRAVELLER, or represent Drug or Sundry house by gentleman with 15 years' experience in the drug trade as buyer and manager. Good appearance and address. Thoroughly trustworthy and energetic. DRUGS, 106, Kensington, Liverpool.

SPECIAL ISSUE.—The Pharmaceutical Journal will have a large extra circulation next week, copies being sent to all Chemists and Druggists in business throughout Great Britain and Ireland. The total number issued will exceed 11,000 copies.

MARKET REPORT.

LONDON, JULY 23.

There are not many changes in the chemical market to report. Carbolic acid is easier, citric acid decidedly firmer, and tartaric acid steady, whilst cream of tartar is very dull of sale. Crude camphor has been firm, but at the close is quiet. Refined camphor is very firm, without any change in the quotations. In the alkaloidal market the opium alkaloids have been advanced in price. Caffeine is quiet, and quinine is unchanged. Glycerin is a firm market, whilst menthol is unchanged. The drug sales to-day passed off very briskly, for though the majority of the changes were on the down line, yet a good inquiry was shown, a larger proportion of the lots offered changed hands than is usually the case. The principal features were:—Cardamoms and Japan wax are dearer. Dragon's blood is very firm, whilst quince seeds, both varieties of ipecacuanha, and Jamaican beeswax are easier. Tolu balsam and colocynth are firm, whilst Jamaican sarsaparilla is much dearer. There is nothing of interest to note in the other markets:—

ACACIA (GUM).—At to-day's drug sales a moderate supply, amounting to only 104 packages, was offered. A considerable proportion of this consisted of *Trieste* gum, and it was to this kind that the attention of buyers was alone directed. For medium to bold greyish picked gum £6 10s. to £7 15s. was paid, whilst pale grain was bought in at £7. A few parcels of *Soudan* sorts were also bought in, siftings at 23s. to 30s., and bold ambery gum at 60s. to 70s. per cwt. In *Persian* sorts a fair business has been done at steady rates. The current quotations are 21s. to 23s. for fine picked, 14s. to 16s. for good sorts, and 12s. to 13s. 6d. for ordinary sorts.

ACID, CITRIC—Is again dearer. The spot quotation for *English* brands of acid in manufacturer's hands is now 1s. 2¼d. to 1s. 2½d. per lb. *Concentrated lemon juice* is quoted at £13 10s. to £13 15s. per pipe, *f.o.b.*, Messina.

ACONITE (JAPAN).—A parcel of 15 bags of fair quality root was bought in to-day at 22s. per cwt.

ALOES.—The supply at to-day's sale was restricted to the *Cape* variety, of which 64 cases were offered. These sold at fairly steady rates, the best kinds being, however, bought in. For fair bright hard 23s. to 23s. 6d. was paid, whilst 21s. 6d. to 22s. 6d. was accepted for softish, and 19s. to 21s. ordinary drossy dull quality.

AMMONIACUM (GUM) — Is in limited supply and no demand was shown in auction. At the drug sales three cases of pale gum mostly loose almonds were bought in at 50s. per cwt.

ANTIMONY.—Twelve cases of crude *Japan* antimony were bought in to-day at £19 per cwt.

ANNATTO SEEDS.—A somewhat better inquiry was shown for this article, of which about 60 cases were offered. A barrel of fair bright *Jamaican* seed sold at 4d., with six packages of ordinary dull at 3d. per lb., subject to approval.

BENZOIN (GUM).—The market remains very flat, and a further decline was noticeable in the prices paid in most instances. *Siam* gum, which was only represented by 3 cases, sold at £10 15s. for medium to small palish drop gum, and 38s. for ordinary drossy dark siftings, whilst £30 was the buying-in price of a case of fine bold, free pale almonds. *Sumatra* gum sold at a decline of 5s. to 7s. 6d. per cwt., £6 15s. being accepted for fairly good seconds with pale clean centres, but false-packed sides, whilst in addition £5 12s. 6d to £5 15s. was paid for fair seconds with medium centres and very false packed sides, and 90s. to 95s. for 29 cases of a similar quality but dull fracture. Several cases of fair almondy *Penang* seconds were bought in at 90s. to 97s. 6d., whilst 17 cases of low *Palembang* thirds sold without reserve at 19s. 6d. per cwt.

BORAX.—The Syndicate quotations remain unchanged, *crystals* being quoted at 19s. and *powder* at 20s. per cwt. on the spot. At the drug sales to-day 10 casks of Townsend's make were bought in at 21s. per cwt.

BUCHU. — This article was in better demand to-day, but the prices paid show an average decline of about ½d. per lb. upon the last sale rates, the market being, however, rather irregular. Out of 42 bales offered, about 30 sold at 2d. for fair *round* part greenish and part yellowish, and 1½d. for very yellow stalky leaves. The *long* variety is very scarce, and advanced prices have been paid recently for small lots. Privately, 9d. to 10d. per lb. is now asked. At to-day's drug sales *round* leaves only were offered.

CALUMBA ROOT.—An average supply was offered to-day, but no sales were effected. Ordinary brown sorts were bought in at 15s., and good picked yellow root at 45s. per cwt.

CAMPHOR (CRUDE).—A moderate business has been done in *China* camphor during the week, including a sale of 200 piculs on Tuesday for distant shipment at 100s. *c.i.f.* per cwt. After this, 105s. was at first quoted for August to October shipment, but ultimately holders modified their views considerably, and offered at 94s., *c.i.f.* At the drug sales 56 cases of *Formosan* camphor sold at 117s. 6d. per cwt.

CANNABIS INDICA.—Very dull of sale. Ordinary dusty brown tops were bought in at 2d., and greenish ditto at 3½d. per lb.

CANADA BALSAM.—Two barrels of fair quality were bought in at the drug sales at 1s. per lb.

CARDAMOMS.—A good supply was offered to-day, and met with a good demand, the prices paid showing an advance of about 2d. per lb., whilst *seed* sold at full to rather higher rates. The quotations are as follows:—*Ceylon-Mysore*: Fine bold plump pale, 3s. 2d.; good ditto, 2s. 10d. to 2s. 11d.; medium to bold plump, 2s. 6d. to 2s. 9d.; small to medium round, 2s. 3d. to 2s. 5d., and ditto yellowish, 2s. to 2s. 2d. In addition *pickings* sold at 1s. 6d. to 1s. 9d., according to colour and size. *Seed* sold at 2s. 9d. to 2s. 10d. per lb. for good quality.

CASCARA SAGRADA.—The market is easier. At the drug sales about 400 bags were shown, and the majority of these were bought in, but 19s. per cwt. was paid for 103 bags of fair quality bark, newly arrived. This shows a decline of about 1s. per cwt.

CASCARILLA.—The market is fairly steady. To-day 45s. was paid for good bright quill, and 39s. for fair greyish ditto rather thin. *Siftings* were bought in at 30s. per cwt.

CASSIA FISTULA—Steady. In auction a parcel of good *Dominica* pods sold at 16s., and ordinary wormy broken ditto without reserve at 5s. per cwt., whilst 67 bags from St. Lucia fetched 15s.

CINCHONA.—A parcel of *Crown* bark sold to-day at 11d. for sound quality, 5d. to 7d. for medium ditto, and 3d. down to ½d. for damaged grades, whilst 5 bales out of a parcel of 177 of flat *Calisaya* bark sold at 1s. 5d. per lb.

COCA LEAVES.—*Truxillo* leaves of good quality are in small supply, and held for 1s. 2d. per lb. To-day two bales of fair brownish *Ceylon* leaves sold at 9d. per lb.

COLOCYNTH.—The market remains very firm, although no good quality was sold in auction, the only lot changing hands being a bale of ordinary broken *Spanish*, for which 1s. per lb. was paid. Privately 2s. 8d. has been paid for good *Turkey* apple.

COPAIBA (BALSAM).—*Maranham* balsam of good quality is still scarce, and held for 2s. 2d. per lb. At the drug sales 5 packages of pale cloudy balsam sold at 1s. 3d. to 1s. 4d. per lb.

CREAM OF TARTAR—Is very dull of sale at easier rates. On the spot fine white *French crystals* are now offering at 94s. to 95s., whilst *German* brands of *powder* are quoted at 96s. to 99s. per cwt., according to brand.

DRAGON'S BLOOD—Is in moderate supply, and selling with good inquiry at full rates. To-day £10 was paid for fine bright *Singapore* lump, and £7 10s. to £7 12s. 6d. for medium ditto.

ERGOT OF RYE—Of good quality is in moderate supply on the spot, and the parcels which were offered to-day did not attract any attention. *Spanish* ergot rather weevily was bought in at 5½d. to 9d. per lb., whilst 6d. was the buying in price of ordinary Russian.

GALLS.—The market for *Persian* galls is quite lifeless with the exception of a small business in *greens*, which have sold during the week at steady rates. Quotations are:—*Blues*: 51s. to 53s.; *greens*: 42s. to 45s.; *sorts*, 48s. to 50s., and *whites*, 38s. to 43s. per cwt. At the sale, *Turkey* galls were bought in at 32s. and *Chinese* at 15s. per cwt.

GAMBOGE—Sold to-day at irregular rates, but on the whole at easier rates. For fine bold pipe of good fracture £9 2s. 6d. to £9 5s. was paid, whilst £7 2s. 6d. to £7 10s. was accepted for fair pickings. In addition,

16 cases which the broker said were slightly adulterated with lead, sold at £6 15s. to £7 per cwt.

Guaiacum (Gum).—Two cases of ordinary drossy lump sold in auction for 4d. to 6½d. per lb.

Honey.—A feature of the business in this article to-day was the large supply of new *Jamaican* honey, nearly all of which sold, amounting to about 300 packages. The prices paid ranged from 30s. to 28s. 6d. for fine bright pale, and 25s. to 20s. for ambery and brown, whilst 16s. 6d. to 18s. 6d. was accepted for ordinary dark foul. A parcel of *New Zealand* honey was bought in at 25s., and *Californian* at 40s. per cwt.

Ipecacuanha. — Privately the market has been very firm. Since our last report business has been done privately in *Rio* (Brazilian) root at steady rates, 6s. 2d. having been paid for good quality root. *Carthagena* (Columbian) root has sold at advanced rates, 4s. 8d. followed by 4s. 9d. having been paid A fair supply of both varieties of root was offered to-day, and contrary to what seemed likely from the prices paid privately the market gave way considerably, and showed a sharp decline in value. In spite of this to-day's prices compared with the last sale, show an average rise of 4d. to 5d. per lb. Out of about 50 bales of *Rio* (Brazilian) root offered, some sixteen sold. 6s. 2d. to 6s. 3d. being paid for fine picked, 5s. 10d. to 5s. 11d. for sound annulated, and 5s. 7d. to 5s. 9d. for fair ditto slightly wiry. *Carthagena* (Columbian) root sold rather freely at 4s. 6d. to 4s. 7d. for good quality root. For this grade 4s. 9d. had previously been paid privately.

Kamala.—Three cases of this drug sold in auction to-day at 5d. per lb.

Kino (Gum).—Two cases of genuine *East Indian* kino from Bombay sold in auction at 12s. per lb.

Kola Nuts—Are quite neglected, although several lots were offered.

Lime Juice. — Seventy packages of *Jamaica* juice were bought in to-day at 1s. to 1s. 2d. per lb.

Menthol—Is quiet at practically unchanged rates, 9s. 9d. to 10s. being the nominal spot quotation. For shipment the quotations are rather higher, 9s. 6d. per lb., *c.i.f.* terms, being now asked. At the drug sales nine cases were bought in at 9s. 6d. to 10s. 6d. per lb.

Myrrh (Gum) — Was in very large supply to-day and a better demand was shown than usual. Good native picked gum sold at 80s. to 82s. 6d.; ordinary dusty sorts at 40s., and siftings at 34s. per cwt.

Oils (Essential).—*Star anise* oil is quiet, but steady at 7s. 6d. per lb. on the spot. *Cassia* oil is quite neglected, with only nominal quotations. *Peppermint* oil is worth 9s. 3d. to 9s. 6d. for *H. G. Hotchkiss'* brand on the spot, whilst 40 per cent. *Japan* oil quotes at 6s., and dementholised at 4s. 3d. per lb. on the spot. At the drug sales several parcels of essential oils were bought in, including *Eucalyptus* (*HB* brand), at 2s. per lb.; *Sassafras* (*D & O* brand), at 3s.; *Ylang Ylang*, at 4s. per oz.; *Bay*, at 10s.; and *Lime* oil at 6s. per lb.

Opium. — The London market is very strong, and prices are again higher. *Soft shipping* varieties are quoted at 12s. to 13s. 6d. *Smyrna* at 9s. 3d. to 9s. 6d., and *druggists' seconds* at 8s. 9d. to 9s. 3d. per lb. There is little fine quality *Persian* opium offering. For ordinary qualities 11s. to 12s. per lb. is quoted. At the drug sales three cases and one box of damaged *Persian* opium sold at 10s. 3d. to 10s. 6d. per lb. on the spot.

Opium Alkaloids.—As seemed probable from our last report, the quotations have been advanced this week 3d. per oz. in the case of *Morphine*, and 6d. in that of *Codeine*. The current quotations for the former are now 5s. for *powder*, and 5s. 2d. for *cubes* in 1000-oz. lots, whilst *Codeine* in 100-oz. lots is worth 11s. 6d. per oz.

Quassia—Is again easier. To-day about 20 tons of *logs* sold at £4 2s. 6d. to £4 10s. per ton. *Chips* were bought in at £12.

Quicksilver — Remains at the prices fixed last week, the importer's price being £6 7s. 6d., whilst second-hand holders offer at £6 7s. per bottle.

Rhubarb—Is still very slow of sale. To-day an average supply of about 64 cases were shown, but only about a dozen sold at the following rates:—*Canton*: Good even pinky, bold flat, 1s. 3d.; good small round trimmings, 1s. 1d.; good small to medium round, 11d. *High dried*: Ordinary mixed flat one half pinky, 9½d. per lb. No *Shensi* root was sold.

Sarsparilla.—At to-day's sale genuine grey *Jamaican* root sold at an advance of 2d. to 3d. per lb.: 1s. 6d. to 1s. 7d. being paid, whilst damaged sold at 9d. per lb. In addition *Guayaquil* sold at 1s. 2d.; *Lima-Jamaican* at 1s. 3d. to 1s. 4d., whilst *Honduras* was bought in at 1s. 1d. to 1s. 5d. per lb.

Seeds (Various).—*Coriander*: Morocco seed sold at the spice sales at 7s. per cwt. *Aniseed* was bought in at 22s. 6d. for *Turkish*, 25s. to 26s. for *Spanish*, and 25s. for *Russian* seed. *Stavesacre* was bought in at 90s. per cwt., *Cumin* at 35s. to 37s. 6d. per cwt., and *Strophanthus* at 3s. 6d. per lb.

Tamarinds—Are slow of sale. Eighteen barrels of *West Indian* sold at 9s. 6d. to 9s. 9d. per cwt.

Turmeric—Remains very dull of sale, with only a moderate business doing in *Bengal* at 7s. 3d. to 7s. 6d. per cwt., according to quality. At the drug sales 40 bags of *Bombay* were bought in at 10s. per cwt.

Wax (Bees).—*Jamaican* wax was in good supply to-day, and although the demand was brisk, the prices paid show an easier market to the extent of 2s. 6d. The quotations are:—*Jamaican*, £7 15s. to £8 5s.; *Zanzibar*, £5 5s. to £6 7s. 6d.; and *West Indian* £6 7s. 6d. without reserve. In addition *Madagascar* was bought in at £6 15s. to £6 17s. 6d., *Italian* at £6 15s., and *East Indian* at £6 5s. to £6 12s. 6d.

Wax (Japan).—The market is quiet, but very firm. Privately, business has been done in pale *squares* at 33s. 6d. per cwt., 34s. being now the general quotation. For arrival higher prices are asked, 37s. 6d., *c.i.f.* terms, being now asked. At the drug sales pale *squares* sold at 34s. 6d., and yellowish ditto, without reserve, at 29s. per cwt.

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Newcastle Chemical Market, July 21. —Rather more is passing in chemicals this way, but not by any means an average trade for the time of year. Sulphur is in good request, and as the article is scarce, makers are holding for a higher price by 5s. per ton. Prices are:—Bleaching powder, according to markets, £6 10s. to £7 10s. Soda crystals: 37s. 6d. to 45s. Soda ash, 52 per cent., £4 5s. Alkali, 52 per cent., £5. Caustic soda, 70 per cent., £7 5s. to £7 15s Sulphur: £4 5s. per ton.

Manchester Chemicals and Drysalteries, July 20.—Although the market for miscellaneous chemicals is reported firm, this is not regarded in many quarters as a fair indication of the existing state of things. It is well known that export demand is very slack, and this is not counterbalanced by an additional home demand. On the other hand, those drysalters who deal with calico printers complain that deliveries on contract account are delayed, owing to the heavy stocks in hand waiting instructions for disposal. Meantime, concessions are being made for export, but for home consumption heavy chemicals remain unchanged. Bleaching powder is a shade easier, but, owing to the hot weather, soda crystals are fairly firm. Ammonia alkali, 58 per cent., is held at £3 7s. 6d. per ton, in bags, on rails at the works; 6s. extra casks. Permanganate of potash is scarcer and dearer at 75s. per cwt. Sulphate of ammonia is again lower, £8 Liverpool; £7 12s. 6d. to £7 15s., on rails, Lancashire; and £7 15s, Leith. White powdered arsenic is without change. Chlorate of potash lower, and ranging from 4¾d. to 4½d. Yellow prussiate, best local makes, is unchanged at 7½d, but foreign is being put on the market at all prices, as low as 6½d. being named. Bicarbonate of soda is firm at £6 5s. per ton, casks.

Liverpool Market Report, July 22.—Linseed in slight demand, sales of cargoes for forward delivery have been made at a little over the late prices. Canary seed: Sales have been small, 450 bags of Turkish sold at 24s. 6d. per 464 lbs., and 50 bags at 25s. early in the week, but holders now ask 27s. 6d. to 28s., and have refused offers of 26s. per 464 lbs. for Turkish. Gum arabic: Demand only retail, with prices in buyer's favour. Turmeric meets with moderate inquiry, and a little Madras finger has sold at 9s. 6d. per cwt. Honey: Some 120 barrels of Peruvian found buyers between 17s. 6d. and 18s. 6d. per cwt. Cochineal: Rosy-black grain has been selling at recent rates. Castor oil is in fair demand at well-sustained prices; Calcutta, good seconds, rules 3¼d. to 3⅜d. per lb.; Madras, 2⅛d. to 2¾d.; French, 2½d. to 2⅝d. ex quay; 2½d. ex store. Olive oil is in limited request at recent well-sustained prices. Linseed oil is steady at 17s. 6d. to 19s. 6d. per cwt. for Liverpool makes. Cottonseed oil remains at 15s. 9d. to 16s. 3d. per cwt. for Liverpool refined; American, 16s. 6d. Spirit of turpentine unchanged at 19s. 9d. per cwt. Petroleum is firm, Russian at 5½d. per gallon; American, 6¼d. to 7½d. Sal ammoniac: 37s. per cwt. Bleaching powder: £7 to £7 5s. per ton. Copperas: Lancashire: 38s.; Welsh, 35s. per ton. Potashes: 20s. 3d. to 20s. 6d. per cwt. Pearlash: 35s. per cwt. Prussiate of potash: 7½d. per lb. Cream of tartar remains firm at 100s. per cwt., and slow of sale. Bichromate of potash: 4⅝d. per lb. Chlorate of potash: 4½d. per lb. Bicarbonate of soda: £7 per ton. Soda crystals: £2 10s. per ton. Borax: 20s. per cwt.; 21s., powder. Caustic soda: 70 per cent., £7 12s. 6d. to £17 15s. per ton.

MISCELLANEOUS NEWS.

MESSRS. BURROUGHS, WELLCOME AND CO.'S ANNUAL EXCURSION.—On Saturday, July 18, the numerous employés of this firm held their annual excursion, the place visited being Dover. Those connected with the works left Dartford by special train at 7.25 a.m., the London employés leaving Cannon Street Station (S E.Ry.) at 8.0 a.m. Dover was reached about 10.15, between which time and noon the places of interest in the town were visited. At 12 o'clock the party assembled at the Town Hall, where an excellent dinner was provided by Mr. C. A. Fairlie, of the Apollonian Hotel, Dover. The chair was taken by Mr. H. S. Wellcome, Mr. R. C. Sudlow occupying the vice-chair. The stewards were Messrs. Astill, Baxter, Belthle, R. Clark, Dauncey, Davies, Finn, Hill, Linstead, Mace, Oliver, Scott, Smith, Stevens, Williams, and W. Wood. Various toasts were proposed and drunk, amongst which were "The Queen," "The Firm," "The Employés," "The Fair Sex," "The Press and Visitors." After dinner the party visited many of the spots worthy of notice, both in and around Dover, many taking advantage of the railway excursions and steamboat trips to places a little distance away. At 6.30 p.m. the party again assembled at the Town Hall for tea, afterwards returning from Dover by a special train at 7.45 p.m., arriving at Cannon Street about 10.0 p.m., and at Dartford about 10.30 p.m., all having enjoyed a very pleasant outing.

STRYCHNINE FOR QUININE.—Mr. E. B. Reece, the District Coroner, held an inquest at the Cardiff Town Hall on Wednesday, July 15, touching the death of William Hawke Smith, a master mariner, aged 45, of 44, Beauchamp Street, Riverside, who died under strange circumstances on Tuesday evening, particulars of which have already been published. Mrs. Smith, the wife of the deceased, said her husband was suffering from neuralgia, and she gave him a dose of what he purported to be quinine. The substance had been in the house for about twelve years, but had never been used by anyone. After taking the mixture the deceased became sick and died in a few minutes. Dr. Greener said the supposed quinine was a mixture of some strong irritant poison, and judging from the effect produced he should think that it was strychnine. The jury recorded a verdict of "death from misadventure."

POISONING BY LAUDANUM.—The necessity for providing more stringent regulations for the sale of laudanum was emphasised at an inquest held last week at the Sussex County Hospital, Brighton, on the body of John Thomas Cooper, painter and glazier. From the evidence it appeared that whilst under the influence of drink deceased had visited different chemists' shops wanting to purchase laudanum. Several refused to serve him, noticing that he had been drinking. The Coroner (Mr. J. E. Bush) remarked that it would be a most improper thing for a chemist to supply laudanum to a man who seemed under the influence of drink. Greater restrictions ought to be placed upon the sale of laudanum than existed at present. All a chemist now had to do was to label the bottle "Poison." A verdict of "Suicide whilst of unsound mind" was recorded.

POISONING BY CARBOLIC ACID.—An inquest was held at the Oldham Town Hall, on Wednesday, July 15, before the coroner, Dr. Geo. Thomson, on the body of Hannah Williams, a young married woman, whose death was the result of carbolic acid poisoning. Evidence was given showing that the deceased had drunk the contents of a bottle of carbolic acid. The Coroner remarked that at present there was no restriction on the sale of carbolic acid, which had been used frequently for suicide in the last few years. Probably when many more people had lost their lives our legislators might find time to place difficulties in the way of the public obtaining this poison. A verdict of "suicide whilst temporarily insane" was returned.

LINSEED MEAL A DRUG.—At the Dublin Police Court, on Friday, July 17, Mr. Swifte gave his decison in the case of Mr. S. Curham, against whom a summons had been issued with regard to the alleged adulteration of linseed meal with starch. He said there should be a conviction unless it could be shown that the linseed meal was not a drug. There could, however, be no doubt that it was a drug. Under the circumstances, however, he thought a nominal fine would meet the case. Mr. Curham, there was no doubt, had sold the linseed meal as he got it; consequently out of a possible fine of £20 he would merely put on a nominal penalty of 10*s*.—Mr. Tobias, solicitor, said Mr. Curham was free from moral responsibility in the matter, as there was no doubt he sold the stuff as he got it.

POISON INSTEAD OF BLACK DRAUGHT.—On Thursday, July 16, a young man residing in Greenock, sent a prescription for a black draught to a chemist in that town. When the medicine was brought he drank it as ordered, but immediately became alarmingly unwell. Medical aid was at once called, and it was found that instead of the medicine intended, the man had taken a deadly poison. He suffered most excruciating pain, but, fortunately, with medical assistance, the poison was removed from his system. Several hours elapsed before he was declared out of danger by the doctors. It appears that two bottles of medicine were being made up in the chemist's shop at the time, and in labelling them a mistake had been made.

CHILDREN POISONED BY BELLADONNA.—On Sunday, July 19, a number of women took their children to Guy's Hospital, suffering from the effects of a strong narcotic poison. The symptoms were at once recognised by the house physician as those of belladonna poisoning, and the stomach pump was at once applied in every case. It appears that a small boy employed by a local surgeon, while dusting something in the surgery, had found something which he believed to be liquorice root. With this he made a decoction in a large bottle and stood drinks therefrom to his young companions. Ten children were poisoned, six being taken to the hospital and four treated by local doctors. Of those taken to Guy's Hospital three were sufficiently recovered to be removed home the same night. The three other cases, being more serious, were detained.

A NEW INSECTICIDE.—The highly poisonous nature of acetylene has suggested to M. Chuard the possibility of employing carbide of calcium as an insecticide for agricultural purposes. M. Chuard proposes to try thoroughly mixing the carbide with earth, so that under the influence of moisture acetylene would be slowly given off at the roots of plants, thus preserving them from attack. At the same time, the bye-products, consisting of chalk and a little ammonia, would have a beneficial effect on the soil. It is proposed to try this method against phylloxera. Whether this would succeed equally well in all weathers, wet or dry, is quite another question.—*Nature.*

A NEW PHARMACY.—Mr. W. J. Talintyre, Associate of the Pharmaceutical Society (formerly with Messrs. Hooper and Co. and Messrs. Twinberrow, London, W.), will shortly open a high-class modern pharmacy at 144, Stroud Green Road, N. His intention is to conduct the business on the most approved modern lines.

PERSONAL.

AT a quarterly meeting of the Council of the Royal College of Surgeons, on the 9th inst., Sir William MacCormac was elected President, Messrs. Macnamara and Langton Vice-Presidents.

DR. H. A. D. JOWETT has been appointed assistant to Dr. Power, the director of the new Welcome Research Laboratories.

THE Class Medal in Prof. Ivison Macadam's Chemistry Class at the Edinburgh Medical College for women has been taken by Miss Margaret C. Wade with 100 per cent. of marks. Miss Wade is a pupil in the pharmacy of Mr. Peter Boa, 119, George Street, Edinburgh.

NEW BOOKS AND NEW EDITIONS.

LES FERMENTS SOUBLES (Diastastes—Enzymes). By EMILE BOURQUELOT (Docteur es Sciences). (Société d'Editions Scientifiques, 4, Rue Antoine-Dubois 4. Paris.)

LES ALCALOIDES DES QUINQUINAS. By E. LEGER. (Société d'Editions Scientifiques, 4, Rue Antoine-Dubois 4. Paris.)

THE STUDENTS' HANDBOOK OF BRITISH MOSSES. By H. N. DIXON, M.A., F.L.S. With illustrations and keys to the genera and species, by H. G. Jameson, M.A. 18s. 6d. (John Wheldon and Co., 58, Great Queen Street, London, W.C.)

STERILITY IN WOMEN; its causes and curative treatment. By J. R. RYLEY, M.D., M.R.C.S., London. An illustrated edition of this work is now ready, 3s. 6d. (Henry Renshaw, 336, Strand, London.)

CHRIST'S HOSPITAL: Recollections of Lamb, Coleridge, and Leigh Hunt. Edited by R. BRIMLEY JOHNSON. (George Allen.)

OBESITY. By T. DUTTON, M.D. (Henry Kimpton.)

DISEASES OF THE GLANDS AND BONES AND THEIR NON-SURGICAL TREATMENT. By JOHN H. CLARKE, M.D. 1s. 6d. (James Epps and Co., Ltd., 48, Threadneedle Street, E.C.)

EXCHANGE—OFFERS AND WANTS.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Miscellaneous.

For sale.—Entire fittings of a first-class pharmacy, including drawers, counter dispensing ditto, splendid wall case, length 15 ft. 7 in., height, 8 ft. 5½ in.; window enclosure, etc.—Wilson, Lenton, Nottingham.

Student's medicine chest in rosewood, almost new, complete, very little used; take £2 10s.; approval.—Little, Rose Villa, Wigton Road, Carlisle.

Twenty 2- and 3-gallon black show bottles for top shelf, £1 accepted, worth double; delivered, or exchange. Copper lemon, 10 lbs., 28s., exchange anything saleable.—Bridgwaters, Limited, West Bromwich.

Books, etc.

A book of 130 Well-tried Recipes for Chemists and Druggists, comprising well-selected formulæ for general, remedial, veterinary, toilet, and everyday preparations. Post free, 1s. 6d.—Tully, Chemist, Hastings.

WANTED.

Will any chemist please send the present address of J. T. Hall (Seaforth) to—D. Yates, Chemist, Blackburn?

☞ The Journal of August 1 (next week) will have a large extra circulation, and will be sent to all Chemists and Druggists in business throughout Great Britain and Ireland. The total number issued will exceed 11,000 copies.

PROPRIETARY ARTICLES TRADE ASSOCIATION.

A meeting of the Council of the Proprietary Articles Trade Association was held at Anderton's Hotel, Fleet Street, on Wednesday, the 22nd inst., when Mr. Barclay took the chair.

The report of the Executive Committee was read and approved of. Amongst other matters the report stated, in connection with the list of protected articles, that signed agreements had been obtained from nearly the whole of the wholesale houses, and that also the majority of them had undertaken to distribute slips informing the retail trade what the minimum re-selling prices were to be. The Executive Committee had also received from other manufacturers instructions to add their articles to the list. It was also reported that the Conference of the Grocers' Federation, which met at Cardiff, had unanimously adopted the report of its Anti-Cutting Committee favourably recommending the proposals of the Association, so far as they related to patent medicines and kindred preparations. During the month a meeting of manufacturers principally connected with the grocery trade was held, at which several of the most important proprietors were present. The following resolution had been adopted at the meeting, and steps will be taken by the Executive of the Association to carry that resolution into effect:—

That the time has arrived when it is necessary for manufacturers to unite for the purpose of framing some scheme for the prevention of undue cutting in prices by retailers.

That the principle of the plan adopted by the Proprietary Articles Trade Association appears to be the most feasible for attaining the object set out in the foregoing resolution.

That a circular setting forth the details of the Proprietary Articles Trade Association be issued to the manufacturers of leading proprietary articles inviting their adhesion to the movement, and also any comments they may think proper to make, and calling attention to the fact that the Federation of Grocers' Associations recommended the plan referred to.

Mr. Elliman, in a letter to the Secretary, tendered his resignation as President of the Association, and also wished his name to be removed from the roll of members. The Council accepted the resignation of Mr. Elliman with regret.

It was agreed that the Council should appoint local secretaries with power to organise local committees, and it was decided that the election of President should take place at the next meeting of the Council, the members of the Council in the meantime being invited to nominate gentlemen for the office.

TRADE NOTES AND NEWS.

The Red Cross Germicide Co., Ltd.—The business of the Red Cross Germicide Co., perfume distillers and disinfectant manufacturers, proprietors of "Perfume Germicide," "Red Cross Toilet Soap," and other disinfectant preparations, and also dealers in inhalers, sprays, etc., etc., has recently been transferred to a limited company, which has been registered under the same name. No change will be made in the management, and the business will be carried on as heretofore at their offices, 61½, Fore Street, London, E.C. Applications for prospectuses should be addressed to the Secretary.

The Liquor Carnis Co.—A few weeks ago reference was made to the fact that this company had not received the award allotted to it at the Chicago Exhibition for the raw beef juice preparations known as "Liquor Carnis" and "Malto Carnis," also the bone-marrow preparations "Virol," "Marrol" and "Virol sans Sucre." The firm has now received the award, and the medal, judging from the facsimile representation, appears to be very handsomely got up. Why nearly three years have elapsed between the time of its being awarded in 1893 and being received by the Liquor Carnis Company in July, 1896, is difficult to understand, since Americans have a reputation for quickness of despatch in their business transactions, but possibly the handsome appearance of the medal may account for the delay.

Messrs. Evans, Gadd and Co., of Exeter, are issuing, in connection with the forthcoming Chemists' Exhibition to be held at the National Skating Palace, W., in August next, an illustrated pamphlet giving general information concerning their large establishment and brief descriptions of its numerous departments.

DIARY OF THE WEEK.

Secretaries of Societies are requested to send notices of forthcoming meetings not later than Wednesday in the previous week.

Monday, July 27.

British Pharmaceutical Conference, Liverpool.
- Reception by the President and Mrs. Martindale at the Walker Art Gallery at 8 p.m., followed by a Conversazione.
- Demonstration of Radiography.
- Music and Light Refreshments.

Tuesday, July 28.

British Pharmaceutical Conference, Liverpool.
- Conference Meeting in the Arts Theatre, University College, at 10 p.m.
- Welcome by the Lord Mayor (the Earl of Derby).
- Presidential Address and Discussion of Papers.
- Luncheon at the Adelphi Hotel at 1.15 p.m.
- Reading of Papers resumed at 2 p.m.
- Cruise on the Mersey and in the Liverpool Bay on s.s. "Magnetic" at 4.15 p.m.
- Tea on board vessel.

Wednesday, July 29.

British Pharmaceutical Conference, Liverpool.
- Session of Conference resumed at 10 a.m.
- Luncheon at 1.15 p.m.
- Session Finally Resumed at 2 p.m.
- Coaches leave for the Lancashire Watch Factory, Prescot, *via* Croxteth and Knowsley.
- Tea after Inspection of Factory.
- Smoking and Drawing-Room Concert at the Adelphi Hotel, at 8.30 p.m.

Thursday, July 30.

British Pharmaceutical Conference, Liverpool.
- Steamer leaves Landing Stage (Seacombe Boat) at 9.30 a.m. for Chester.
- Luncheon at the Grosvenor Hotel, at 12.30 p.m.
- Coaches leave for Eaton Hall at 1.30 p.m.
- Coaches leave Eaton Hall for Hawarden at 3.30 p.m.
- Tea at the Glynn Arms at 5 p.m.
- Coaches leave for Chester at 7 p.m.

MARRIAGE.

Gill—Vincent.—On the 21st instant, at the Cathedral Church of St. Peter, Liverpool, William Sharpe Gill, son of Mr. Hugh Gill, of Southport, to Louisa Mary, daughter of Mr. James Vincent, of Dorchester. The bridegroom is well known as occupying the position of consulting chemist to Messrs. Ayrton and Saunders, of Liverpool.

LATE ADVERTISEMENT.

Assistant Wanted.

A QUALIFIED Assistant wanted at once for first-class business. Age about 23. Usual particulars to James Dunning, Ventnor.

NEW IDEAS.

AN ENEMA VALVE STRAINER.

Messrs. Reynolds and Branson, of Leeds, having got the sale of their three former inventions in connection with enemas into a healthy condition, are now supplementing them by a fourth, which should prove as useful as any of the others. The enema valve strainer is meant to keep the inlet of the syringe from getting blocked up with particles of solid matter, and is likely to prove advantageous in applying thick injections. The appliance is very simple, consisting of a wire gauze cap which slips over the end of the inlet valve, and retails at the modest price of threepence.

NEW SOLOIDS AND TABLOIDS.

Messrs. Burroughs, Wellcome and Co. call attention to four fresh additions to their list of soloids—zinc chloride soloids, 1 gr.; corrosive sublimate soloids, 1·75 gr.; silver nitrate soloids, 1 gr.; potassium permanganate soloids, 5 gr.; and two additions to their list of tabloids—uranium nitrate tabloids, prepared from the uranious salt, containing 1 gr., and piperazine tabloids, containing 5 gr. each.

SIMPLE QUANTITATIVE ANALYSIS.

Barker Smith proposes to perform alcoholometric or chemical assays by means of an apparatus for determining the heat generated when a definite volume of the substance is mixed with a given volume of water or chemical reagent at a known temperature. The apparatus consists of a small corked vial graduated to 5 C.c.; a one C.c. pipette, and a thermometer graduated in a scale of two degrees Fah. For determining the amount of alcohol in a liquid some water and the substance to be tested are reduced to the same temperature, 5 C.c. of the former is mixed with 1 C.c. of the latter shaken, and the increase in temperature read off by means of the thermometer. The corresponding amount of alcohol is then ascertained from an accompanying table. On carefully checking this process, by comparing it with the most approved methods, the results obtained do not appear to justify the recommendation of the process generally as a substitute for the more accurate, if more troublesome, methods at present in vogue. The correct determination of alcohol, for those who handle spirits largely, is a matter of the highest importance, both from a pecuniary and manufacturing point of view; and the processes now in use certainly give more concordant and reliable results than this thermometric method. The same applies to the determination of urea by means of the rise of temperature on mixing urine with chlorinated soda solution. A perfectly healthy sample gave, by the well-known hypobromite volumetric method, a normal figure for urea, but by the thermometric method the amount of urea indicated would have been decidedly of "pathological significance." As a scientific toy the apparatus is interesting and ingenious, but the inventor is very sanguine when he anticipates that "these methods will survive and belong to the coming epoch."

THE "VENTAIR" CAP.

This newly-patented cap has been designed to meet an oft-expressed want on the part of the public. Almost everyone has experienced the hot and uncomfortable feeling so often felt when wearing a close-fitting and unventilated cap of the ordinary description. By the "VENTAIR" system this oppressive feeling is entirely obviated, and it is possible, when wearing the "VENTAIR," to be in active exercise for a whole day together without the head and forehead suffering from excessive perspiration. By this patented system the cloth or material from which the caps are made, is so woven or constructed that at certain portions thereof openwork spaces are woven, which whilst affording perfect and complete ventilation to the head of the wearer do not permit of a draught anywhere; and although on holding up a cap to the light it is possible to see through the spaces continued round the cap top and bottom (thereby cooling the forehead and temples as well as the top of the head), these do not, from the construction of the cloth, allow water to penetrate the material. The wearer may be out of doors all day in a heavy rain without finding the inside of the cap at all wet; nor will the cloth absorb the rain; and by thoroughly shaking the cap it will be found in a few minutes practically as dry as when put on at first. Pharmacists who are shooting men, anglers, golfers, and cyclists will find the cap a useful adjunct to their outfit. The manufacturers are Messrs. Ingle and Co., 20, Cheapside, London, E.C.

ESSENTIAL OILS.

Mr. William Poppelreuter, 54, Portland Street, Manchester, sends a copy of the quarterly report on "Essential Oils and Fruit Essences," issued by Heinrich Haensel, for whom he is agent. In this is embodied a large amount of useful information on the subject, whilst special attention is directed to the series of terpeneless oils, which form a prominent line in the products of the firm.

IODINE AND IODOFORM VASOGENES.

In last week's Journal attention was drawn to a combination of iodoform with a heavy hydrocarbon oil which had been found efficacious for the disinfection of wounds. We have since then received samples of the above two combinations from Mr. William Poppelreuter, the proportion of the active ingredient being in both cases 5 per cent. Perfect solution being effected in each case, the preparations seem worthy of extended use in surgery, their utility being obvious.

SAFETY URINAL.

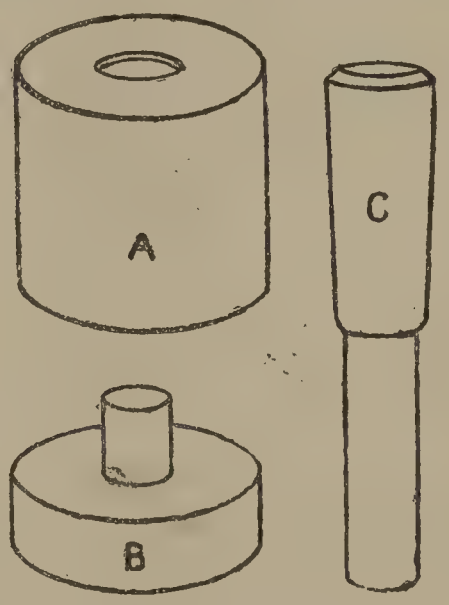
A useful novelty in the shape of a safety urinal has recently been patented by Mr. J. Rhodes, The Pharmacy, Burfield, Yorks. It has the advantage that nothing passed into it can pass out again, except by means of the screw plug-hole which is provided at the back. The construction seems to be an improvement upon the ordinary kind used, cleanliness and comfort being ensured. Mr. Paul Metz, Manchester Avenue, Aldersgate Street, London, E.C., is the sole agent.

APPARATUS FOR RÖNTGEN'S PHOTOGRAPHY.

Messrs. Reynolds and Branson, Leeds, send a copy of their illustrated price list of novelties, in which prominence is given to the apparatus required for the new photography. The firm seems to have laid itself out to supply everything likely to be required in this department, and its efforts have evidently met with due appreciation. In addition, the numerous medical and pharmaceutical appliances which have been from time to time referred to in these columns, have prominence given to them, improvements having been in several instances effected in their construction.

SIMPLE TABLET MACHINE.

The following illustration represents the single tablet machine referred to by Mr. S. Hardwicke, at the Liverpool Conference on Tuesday:—



A is a cylinder to be placed over B. The powder having been introduced, C is then pushed into the cavity and struck with a hammer. The machine is supplied by S. Maw, Son and Thompson, London.

CAMPHOR CROSSES.

Mr. J. Young, chemist, 18, Fleet Street, Torquay, has apparently employed a mixture of camphor and naphthalin in the manufacture of the camphor crosses which he is bringing to the notice of the trade. The combination is one which it would be hard to improve upon, since the camphor effectively masks the somewhat disagreeable smell of the naphthalin. The deodoriser is packed in coloured tin cases shaped in the form of Maltese crosses, and these appear likely to command a ready sale.

THE BERKEFELD FILTER.

The Berkefeld filter consists of compressed and baked diatomaceous earth, and the smallest particle therefore of the filter is porous to the highest degree. This is the reason why the Berkefeld cylinders can give a flow of water five to ten times as rapid as porcelain or asbestos cylinders of the same size. It is claimed that in this large supply of perfectly pure water, together with its absolute certainty of retaining on its surface all disease germs, rests the great practical value of the Berkefeld filter to the public. So open is the structure of the filter that its bulk consists of about 73 per cent. of pores and only about 27 per cent. of solid matter, the latter being almost pure silica, which is not effected by either chemicals or heat. This filtering medium is formed into hollow cylinders closed at one end, and having at the other end either porcelain or metal caps, through which the filtered liquid percolates.

The cylinders are made in a variety of different forms, and fitted up as table filters, domestic pressure filters, experimental filters, travellers' filters, etc., etc. The makers have quite recently been favoured with the order for fitting up their pressure filters at the London Hospital, and within the last few months similar filters have been fitted at the Middlesex Hospital, and the Midddlesex Hospital's Convalescent Home at Clacton-on-Sea. The firm's Aseptic Irrigator, which is very much appreciated in the several hospitals where it has been introduced, also gives an abundant supply of sterilised water at a temperature and pressure adjustable for any surgical requirements, at a few moments' notice, the cost of the water being merely nominal, and its use obviating the necessity of employing antiseptic solutions for flushing wounds, washing the hands, instruments, etc. It will be seen, therefore, that these filters possess many advantages that should commend them to pharmacists, medical men, and the general public.

MARKET REPORT.

London, Aug. 1.

Several alterations in price have taken place in the produce market since our last report, but business generally seems to be very flat. In the chemical market carbolic acid is still quite neglected, but citric and tartaric acids are firm, whilst on the other hand cream of tartar has again declined in price. Crude camphor has been totally neglected during the week, whilst the refined article has not been again changed. Amongst other chemicals hypomeptite of soda is selling cheaply, whilst permanganate of potash is very scarce and dear. Fine chemicals have seen several changes. In tne first place the manufacturers of cocain have raised the price of hydrochlorate 9d. per oz , whilst to-day another advance in the opium alkaloids is announced, morphine being 4d. and codeine 6d. per oz. dearer. Quinine is quite neglected, whilst caffeine is steady. Glycerine continues to be a very fine market, santonin is dull of sale, and the same applies to menthol. In the drug market, both varieties of ipecacuanha are very firm, a fair business having been done privately; whilst large consignments of coca leaves have changed hands for export during the last fortnight. Amongst other crude drugs, tolu balsam is firm, and the same applies to both varieties of colocynth. Jalap and senega root, have an improved tendency. There is little of importance to note in the oil market, whilst shellac is dearer with only a limited business doing. Full details will be found below.

Acacia (Gum).—A fair business has been done in *Persian* gum since our last report, and prices are now steadier. The current quotations are now—Fine picked, 21s. to 23s.; good sorts, 14s. to 16s.; ordinary sorts, 12s. to 13s. 6d.; reddish picked, 15s.; and block, 8s. to 10s. per cwt.

Acid (Carbolic).—The market remains very quiet, and quotations are in some instances rather easier. *Crystals* are worth 6½d. for 34° to 35° C.; 7d. for 39° to 40° C.; whilst 8d. is quoted for 39° to 40° C. (*detached crystals*). *Crude* is very dull of sale, 60 per cent. being offered at 1s. 11d., whilst 75 per cent. quotes at 2s. 3½d. per gallon. *Liquefied* and *Creeylc* are unchangedat 1s. and 10d. respectively per gallon.

Acid Chrysophanic.—This article is very scarce, and likely to see higher prices. For limited quantities, 25s. per lb. would be accepted. Good quality *Goa powder* is exceedingly scarce, and readily commands 12s. per lb.

Acid, Citric.—The market is very firm and there are no sellers of second hand acid under 1s. 2½d. per lb. The manufacturers have little or none for prompt dslivery. *Concentrated Lemmon-juice* is quoted at £13 5s. to £13 10s. per pipe, *f.o.b.* Messina.

Acid Tartaric.—The market is firm with quotations remaining as last reported. Makers of *English* acid still quote, 1s. 3d. per lb. on the spot, whilst *foreign* brands of acid both in *powder* and *crystals* are quoted at 1s. 2d. to 1s. 2¼d. per lb.

Ammonia Compounds.—*Sulphate* is very dull of sale at easier rates, grey 24 per cent. being now quotable at £8 per ton on the spot. In addition *Hull* is worth £7 17s. 6d., *Leith* £7 13s. 9d. to £7 15s., and Beckton terms £7 17s. 6d. *Sal Ammoniac* still quotes at 37s. for *firsts*, and 35s. for *seconds*. *Carbonate* is unchanged at 3d. in *casks*, 3⅛d. in *kegs*, and 3¼d. in *jars*, whilst powder is quoted at ¼d. per lb. above these rates.

Camphor (Refined).—There has been no change in the quotations since our last report. *English* refiners' prices are 1s. 6d. for 1 ton, 1s. 6d. for ½ ton lots, and 1s. 7d. per lb. for smaller quantities of *bells* and *flowers*, with *squares* at 1s. 7d. and proportionate rates.

Camphor (Crude).—This market has been very quiet, and quotations for *Formosan* camphor have declined considerably, 84s. to 95s. per cwt. *c.i.f.*, according to position being now quoted.

Coal Distillation Products.—*Toluol* is steady at 2s. per gallon for *pure*. *Benzol* is quoted at 2s. 8d. per gallon for 50 per cent., whilst 3s. 7d. is asked for 90 per cent. This market is very strong, and prices continue to advance. *Creosote* quotes at 1½d. per gallon. *Crude naphtha:* 30 per cent at 120° quotes at 1s. 1d. per gallon. *Solvent naphtha:* 95 per cent. at 160° is worth 1s. 6d., 90 per cent. at 160° 1s. 4½d., and 90 per cent. at 190° 1s. 1½d. per gallon. *Anthracene:* 13*A*, 9½; *B*, 8¼ per unit. *Pitch* 32s. per ton *f.o.b.* *Tar* quotes at 10s. 6d. for *refined*, and 11s. 9d. for *crude* per barrel.

Cocaine.—The manufacturers of this alkaloid have raised their price for the *hydrochlorate* during the week, 9d. per oz. making the current quotation for 100 oz. lots 13s. 7d. per oz. This quotation is for *cocaine* in tins. One oz. bottles are charged 2d. per oz. more.

Coca Leaves.—During the past fortnight a large business has been done both in *Ceylon* and *Truxillo* leaves at steady rates, the greater portion—amounting to some two hundred bales—being required for the manufacture of the alkaloid.

Colocynth.—Remains very firm. Business continues to be done privately in good *Turkey* apple at 2s. 8d. per lb., showing a steady rate. Fair *Spanish* is quotable at 1s. to 1s. 2d. per lb.

Cream of Tartar.—This article continues to decline in price, and this week's prices show a depreciation of about 2s. per cwt. On the spot good white *French* crystals now offer at 92s. 6d. to 93s., whilst for *German* hands of powder 95s. to 98s. per cwt. is quoted.

Galls.—There seems to be no business doing in *Persian* galls, which are quoted at unchanged rates:—*Blues* at 51s. to 52s., *greens* at 42s. to 45s., *sorts* at 49s. to 50s., and *whites* at 38s. to 43s. per cwt. *China* are also very dull of sale at unaltered rates.

Gentian Root—Is offering for shipment at low rates, 17s. 6d. *c.i.f.* being the current quotation for good quality *French* root.

Ginger.—*Cochin* kinds continue slow of sale. At the weekly sales the majority of the catalogue was brought in, but washed kinds sold at 33s. for ordinary dull medium to small rough. Native cut root sold at 41s. for ordinary limed medium and small half cut. *African* was bought in at 25s. *Jamaican* root continues firm, the majority of the small supply offered being disposed of at 82s. 6d. for ordinary small washed.

Glycerin.—The market continues very firm, but there has been no change in the quotations. Makers' prices for double distilled glycerin, 1·260 gravity, of *German* manufacture, are 75s. to 76s. per cwt., but second-hand holders still offer at 70s. to 72s.

Guarana.—At the present time there seems to be little or no inquiry for this drug. The market price is 2s. 3d. per lb. for fair quality.

Ipecacuanha.—The market is firm. Privately a fair business has been done in good bold *Carthagena* (Columbian) root at 4s. 9d. per lb., whilst *Rio* (Brazilian) root is reported to have been selling at fully steady rates.

Jalap—Has a decidedly firmer tendency, although we have not heard of much business. Good sound *Vera Cruz* root is quoted at 7d. per lb. on the spot.

Menthol—Is very quiet. The general spot quotation for good quality is 9s. 6d. to 9s. 9d. per lb.

Oils (Essential).—*Star Anise* oil is firm, at unchanged rates, 7s. 6d. being still asked on the spot. For arrival, sales are reported at 6s. 5d. per lb., *c.i.f* terms, from July to August shipment. *Cassia* is unchanged, but the prices are firm. *Peppermint* oil

is rather firmer for *H. G. Hotchkis's* brand, which is quoted in some quarters at 9s. 6d., but it is doubtful if more than 9s. 3d. would be paid. *Japanese* oil quotes at 5s. 6d. to 6s. for 40 per cent. strength, whilst *dementholised* offers at 4s. 3d. per lb. The new crop of Dalmatian *Rosemary* oil is now nearly ready for delivery, and is quoted at 182s. 6d. per cwt. *f.o.b.*. Little or nothing seems to be known in regard to the yield of the new crop, but there is said to be a good demand and prices are not likely to decline.

Oils (fixed and spirits. — *Castor:* The supply of beans in Italy is said to be very small, and the prices for the oil have advanced. Best quality is now quoted at 31s. 3d. to 32s. per cwt. c.i.f. terms. *Cotton* is quiet but steady, £16 to £16 10s. being quoted on the spot for refined oil according to brand and package. *Coco-nut* is steady, *Ceylon* being still quoted at £22 15s., and *Cochin* at £26 10s. on the spot. *Linseed* is slow of sale, but practically unchanged in price. Oil in barrels is now quoted at £16 17s 6d. on the spot. *Palm* quotes at £20 15s. for *Lagos*. *Olive* is unchanged at £29 for *Spanish* and *Levant*. *Turpentine* is dull of sale at easier rates, 18s. 7½d. to 18s. 9d. being now quoted for *American* spirit on the spot. *Petroleum* is quiet. *Russian* oil quotes at 5d.; *American* at 5⅜d. to 5⅝d., and *water white* at 6½d. to 6⅝d. per gallon on the spot.

Opium: The London market is very strong, but quotations do not show any material change. For druggists' opium 10s. 6d. to 10s. 9d. is now asked for *firsts*, with *seconds* quotable at 9s. 9d. to 10s. *Soft shipping* quotes at 13s. to 13s. 6d., and *Smyrna* at 9s. 9d. to 10s. In regard to *Persian* opium, the fine grades being firmly held, no business has been done, but low qualities attract attention and stocks are now low. Quotations range from 10s. 6d. to 12s. 6d. per lb. From Smyrna reports advise a strong market at advanced rates.

Opium Alkaloids.—On Thursday owing to the strong position of opium, the manufacturers of these alkoloids advanced their quotation of *morphine, powder* being now quoted at 5s. 4d. and *crystals* at 5s. 6d. for 1000 oz. lots. *Condeine* was raised 6d. per oz. making the current quotation 11s. 9d. to 12s. per oz. according to quality.

Orris Root.—The market is quiet. Fine old *Florentine* root is quoted at 65s. 6d., and seconds at 57s. 6d. per cwt. *c.i.f.*, and business is said to have been done at these rates, although none is reported in the new crop for forward delivery as yet.

Potash Compounds.—*Chlorate* is quiet at 4¾d. per lb. on the spot. *Bichromate* quotes at 4d. per lb. *Prussiate* quotes at 7d. per lb. for *English*, and 6½ for *Beckton*. *Cyanide*: Quiet at 1s. 5d. per lb. for 98 per cent. *Permanganate* is very scarce and dear, 77s. 6d. net. being quoted for *crystals*.

Quicksilver remains quiet, at unchanged rates, £6 7s. 6d. per bottle being quoted in importers' hands, whilst second-hand holders offer at 6d. less.

Quinine Sulphate—Remains quite neglected. The current quotation for the best brands of *German* quinine is still 12½d. per oz.

Sarsaparilla—Is firm. Since the last auctions business has been done privately in sound *Jamaican* root at 1s. 9d., whilst second quality is quotable at 1s. 8d. For *Lima Jamaica* 1s. 6d. per lb. is asked.

Santonin.—At the present time there is little or no demand for this article which is offering at 6s. per lb. in manufacturers hands.

Seeds (Various).—*Coriander:* A parcel of low coarse *East Indian* seed was bought in at the spice sales for 7s. per cwt. *Canary. River Plate* seed sold in auction without reserve at 23s. per 464lb. *Cumin.* A good business has been done privately in *Maltese* seed at steady rates. *Stavesacre.* This article is at present slow of sale, although the supply on the spot is but small. Privately 85s. per cwt. is asked for fair quality.

Senega Root—Is decidedly firmer. Holders of good quality root now refuse to sell under 1s. 1d. per lb.

Shellac.—There has been a fair demand privately with sales at fully steady rates of *Second orange*, whilst *AC Garnet* is worth at 83s. to 84s. per cwt. The weekly sales only brought forward a very moderate supply and the demand was slow, holders being very firm. *Second Orange* realised prices showing an advancement of 1s. upon the rates paid privately, *TN* being now quotable at 89s. per cwt. *Garnet* was for the most part bought in, but 84s. was bid and refused for fine *AC. Button* sold, partly without reserve, at 83s. to 89s. for ordinary to good seconds.

Soda Compounds.—*Hyposulphite* is in fair demand, but offering at cheap rates, *kegs* being quoted at 6s. 9d. to 7s. per cwt. *Soda* is worth 42s. 6d per ton for *crystals, ex* ship. *Bicarbonate*: £7 5s. per ton, landed terms. *Caustic*: 70 per cent. white is worth £8, whilst 60 per cent. is quotable at £1 more. *Nitrate*: *Ordinary* quotes at £7 17s. 6d., and *refined* at £8 5s. per ton on the spot.

Spermaceti.—The market is firm. On the spot 1s. 4½d. to 1s. 5d. is the current rate for *refined* American.

Spices (various).—*Cloves* are still dull of sale. In auction *Zanzibar* were all bought in from at 2d., and good bright at 2½d. per lb. *Penang* were bought in at 7d. for good bright picked. *Clove stems* sold at ⅝d. per lb. *Cassia lignea.* Small sales have been made privately at 32s. per cwt. *Cassia vera.* Coarse and broken Pedang quill was bought in at 23s. per cwt. *Pimento* is in fair request, and selling at steady rates, 2⅜d. to 2⅝d. being paid for ordinary to medium grey, and 2¼d. for fair quality. *Capsicum.* Sound red off-stalk *Bombay* was bought in at 20s., and medium red *Tellicherry* at 25s. per cwt. *Chillies* are quiet, *Zanzibar* being bought in at 38s. per cwt. *White pepper* is dull of sale at unchanged rates. A few bags of *Penang* sold at 3d., whilst fine *Singapore* sold at 3⅛ per lb. *Pepper* is in slow demand. A moderate amount of sea-damaged *Singapore* sold at 2⅛, whilst good clean *Ceylon* was bought in at 2½d., and *Aleppo* at 2⅜ per lb. *Arrowroot* continues dull of sale. About one-third of the *St. Vincent* sold at 1⅝ to 1¾ for good quality.

Sugar of Milk.—Good brands are scarce, and high prices are asked, *crystals* being quoted at 75s. 6d. to 77s. 6d., and *powder* at 72s. 6d. to 75s. per cwt. on the spot.

Tolu (Balsam)—The market is firm. During the week business has been done privately in fine balsam at 2s. 8d. per lb. The stock on tne spot is now only small.

Tragacanth (Gum).—A small amount of business has been done at steady rates. The following are the current quotations:—*Firsts*, £14; *seconds*, £12 to £13; *thirds*, £10 10s. to £11 10s., with other grades ranging from £8 down to 35s. per cwt.

Turmeric — Remains quiet but fairly steady, and a moderate business has been done privately in *Bengal* at 7s. 3d., and *Madras* finger at 7s. 6d., to 10s. 6d. per cwt., according to quality.

Wax (Japan).—A firm market, at an advance of about 1s. 6d. per cwt., 36s. baving been paid privately for good pale *squares* on the spot. For arrival, 37s. 6d. per cwt. *c.i.f.* is still quoted.

Newcastle Chemical Report, July 28. —This market continues quiet, with a slow demand. Sulphur remains scarce, and late advance is fully maintained. Prices are unchanged. Bleaching powder: £6 10s. to £7 10s., according to markets. Soda crystals: 37s. 6d. to 45s. Caustic soda: 70 per cent., £7 5s. to £7 10s. Soda ash: 52 per cent., £4 5s. Alkali: 52 per cent., £5. Sulphur: £4 5s. per ton *f.o.b.*

Manchester Chemicals and Drysalteries, July 28.—There continues little variation in the market for heavy chemicals, and a quiet tone prevails generally. Bleaching powder is pressed forward, and the figure is about £6 12s. 6d. per ton, softwood casks, on rails; for export, £6 15s. to £7, hardwoods, is quoted. Soda crystals, owing to the hot weather, remain firm at 35s. to 37s. 6d. per ton, bags, on rails. Bicarbonate is steady at £6 15s. per ton, kegs, and industrial bicarbonate (for mineral waters), £4 5s. per ton, bags, and £5 5s. per ton, one cwt. kegs, on rails at works, Northwich. Both aniline oil and salts are higher, salts being quoted 7½d. and oil 8d. Glauber salts, 23s. 6d. per ton, in bags, and Epsoms, 65s. Chlorate of soda fairly firm at 5¾d. per lb. for export and 6d. home consumption. For best Lancashire makes of yellow prussiate holders are firm at 7½d. per lb. Chlorate of potash is down to 5¼d. Naphthas are unchanged. Sulphate of ammonia has a downward tendency, and there is no improvement in lime salts, brown acetate being quoted £4 2s. 6d. for Welsh at station, Manchester.

Advertisements in the Pharmaceutical Journal.

All Advertisements must be sent to the Office, 5, Serle Street, Lincoln's Inn, W.C., where replies to prepaid advertisements may be addressed, and will be redirected free of charge. Postal Orders should be made payable at Lincoln's Inn, W.C., to Street Bros. Cheques should be crossed "London Joint Stock Bank."

Prepaid Advertisements.—Advertisements of Assistants Wanted, Apprenticeships, For Sale, Partnerships, Businesses for Disposal, Businesses Wanted, and Premises to Let are charged as follows:—Fifty words or less, 3*s.* 6*d.* Each additional ten words or less, 6*d.*

Advertisements of a general character are inserted at 4*s.* 6*d.* each for seven lines (50 words) or less, and each additional line of seven words, 6*d.*

ENGLISH NEWS.

Chemists and Unscrupulous Customers.—A rather singular case came under the notice of the Cheshire Coroner (Mr. H. C. Yates), at Altrincham, on Tuesday, when he held an adjourned inquest on the body of the infant child of Richard Rostron, a coach trimmer, residing at St. George's Square, Altrincham. The mother of the deceased child—which was ten months old—had taken her on several occasions to the shop of Mr. Henry Read, chemist and druggist, George Street, and told him the child was suffering from diarrhœa, consequent on teething. This is what she alleged, but Mr. Read, in his evidence, denied that she told him the child was teething. The child died from convulsions. The Coroner pointed out the discrepancy between the evidence of the mother and that of Mr. Read, and said it was not fair she should not have told him that the diarrhœa was in consequence of teething. The jury coincided, and were of opinion there had been neglect on the part of the mother. The Coroner thereupon ordered a post-mortem, which was made by Dr. Blease, who now stated that death was due to diarrhœa and imperfect feeding. In reply to the Coroner Dr. Blease said it would have been better, certainly, if the chemist, who had seen the child several times, had told the mother to take it to a doctor. The Coroner, in summing up, said there was no excuse for her, especially with such an excellent dispensary as they had in Altrincham. She, however, appeared to have preferred a chemist to a doctor, and under the circumstances, he should not recommend the jury to return a verdict of manslaughter. The jury returned a verdict of death from diarrhœa, due to want of medical attention, and requested the Coroner to censure the mother severely.

Robbing a Drug Store.—A young man named John Johnson, alias Revill, of Sheffield, has been committed to the Quarter Sessions on a charge of having stolen four shillings from the till in the drug stores of Mr. Frederick Riding, of Bolsover Street in that city. On Saturday evening in the temporary absence of the prosecutor from his shop, the prisoner it was alleged, entered it, leaned over the counter, and took the money. Another man was keeping watch in the street, and when the prisoner came out they bolted. The police visited the prisoner's house, and his wife said he was not at home Noticing soot on the floor the officers looked up the chimney and there was the prisoner in hiding. When pulled down he was very violent. As there were several convictions against him, he was refused bail.

The L. G. B. and Workhouse Drug Dispensing.—At the meeting of the Wells Board of Guardians, last week, the clerk read a letter from the Local Government Board stating that they had received his letter of the 6th inst., and that they had assented for a period of one year on trial to the re-arrangement proposed by the Guardians of the Wells Union, which was that the medical officers should dispense their own medicines, and also that Messrs. R. Purnell, G. O. Risdon, M. J. Doidge, and F. J. Malden, the district medical officers, should accordingly have their salaries raised to the proposed amount.

British Dental Association.—The annual meeting of the Western Branch of the British Dental Association was held last week at Clifton. A meeting of the Council at the Medical School was followed by the general meeting, at which the chair was taken by Mr. J. J. H. Saunders, of Barnstaple. Mr. J. T. Browne-Mason (Exeter), the Hon. Treasurer, presented the accounts, which showed a balance in hand, but owing to extra expenses, the expenditure had exceeded their income by £2 10*s*. The Council proposed that the annual meeting should be held next year at Exeter, and that Mr. Henry B. Mason should be the President. The reports were adopted, and Mr. S. Taylor Genge (the President), in his address, said there had been considerable advance in the general equipment and knowledge of dentists, and for these they were chiefly indebted to scientific discovery and research. The ideal anæsthetic which would produce anæsthesia without any risk to the patient had yet to be discovered, but the admixture of oxygen with nitrous oxide was certainly a step in that direction. As to the new photography, there were difficulties in the way of utilising it to practical advantage for dentists, but when, with more knowledge and improved methods they were able to examine the roots of their patients' teeth, it required little imaginative power to foresee the possibilities in treatment which would be opened up. Mr. Oliver (Cardiff) detailed the protective measures which South Wales dentists had adopted, and it was decided to ask the British Dentist Association to encourage local centres of that kind. Various papers were read and demonstrations took place, and in the evening the annual dinner was held at the Clifton Down Hotel.

British Medical Association.—A meeting of the Dorset and West Hants branch of the British Medical Association was held at the King's Arms Hotel, Christchurch, last week. It was resolved to hold the autumn meeting at Weymouth. Medical cases were read and questions answered, and the members, after being entertained at luncheon by Messrs. Hertford and Watmough, were kindly shown over the Priory by the Vicar. The members subsequently dined together at the hotel.

The Plymouth Borough Coroner (Mr. Johns) held an inquest last Monday respecting the death of the seven weeks' old child of Mrs. Cox, wife of a mariner. The mother stated that on Saturday morning on taking the child out of bed to wash it she found it seriously ill, and immediately sent for Dr. Dutton. He arrived within five minutes, but the child was dead. By the Coroner: She had given it a dose of Mrs. Winslow's soothing syrup at two o'clock in the morning. Dr. Dutton said he had never previously attended the child. He found it had no nourishment between the hour at which the dose was administered and 11 a.m. the same day. The child was weak from its birth, and he considered it inadvisable to give the syrup to weak children, as it contained opium. He had made a post-mortem examination and attributed death to exaustion. The body was emaciated, being, in fact, nothing but skin and bone. It was half the size at the time of death it ought to have been at birth. He did not think any blame attached to the mother, who, like most people, was ignorant of the presence of opium in the syrup. The jury returned a verdict of "Natural causes," acquitting the mother from all blame.

Course of Study for Apprentices.—Mr. James Cocks, the energetic Hon. Sec. of the Plymouth, Devonport, Stonehouse and District Chemists' Association, has always taken a keen interest in chemists' apprentices, and his last move in this direction has been to help young students as to the course of study they should adopt. He has consulted some capable men on the subject, and assisted by Mr. J. W. Johnson, R.N., and Mr. E. A. Hodge, he has tabulated the replies received. Taking it for granted that the apprentice has passed his first examination, the table reads:—First year: Chemistry (elementary), inorganic, theoretical and practical. Second year: Chemistry (advanced), inorganic, practical; and botany, elementary. Third year: Chemistry (advanced), inorganic, theoretical; materia medica. Fourth year: Chemistry (elementary) organic, theoretical; botany, advanced. One evening a fortnight, from 8.30 to 9.30. After attending the chemistry class arrangements have been made for pharmaceutical Latin, grammar, posology, and theoretical pharmacy, taking students through the B.P., the proportions of the two classes to be arranged as required and found necessary. Mr. Johnson has kindly promised to undertake the pharmaceutical Latin and posology, the class of pharmacy to be arranged at a later date. It is suggested that during the summer the student should attend classes in field botany and collect specimens for the herbarium prize offered by the Plymouth Association.

Great Loss of Lavender Oil.—The Croydon Fire Brigade received a "call" to Jakson's distilleries in Mitcham Road, early in the morning some days ago. The distilleries are situated at the Croydon end of Mitcham Common, and upon arriving there the brigade found a large building, used as stores, well alight, and the dwelling house known as Mitcham Villa, in the occupation of Mr. Phillip Lelasseur, was in imminent danger of becoming involved. Their efforts to save the stores were futile. About 4000 lbs. weight of essential oil of lavender, worth from 50*s*. to £6 a pound, fell a prey to the flames.

Robert Kirkley, pharmaceutical chemist, formerly of Kendal, manager to a chemist at Ramsbury, Wilts, has committed suicide by taking prussic acid. The coroner's jury returned a verdict that he was of unsound mind.

The Age of Quackery.—This is unfortunately an age of quackery, and thousands are killed annually by quacks; it is also the age of credulity, people believe in every lying advertisement they read in the papers, and swallow all the pernicious compounds with the blindest of faith. The fat person who wants to get thin, instead of going the right way to do it, and safely and permanently reducing his or her bulk, generally flies to the aid of advertised "harmless" compounds that are simply poison, and only reduce weight by destroying the digestive organs first. The pale, drawn, wrinkled faces of the votaries of one particular quack remedy for reducing fat may be seen in the Row and in the streets daily. The female whose beauty is waning endeavours to simulate youth by the aid of cosmetic and arsenical wafers, that give the complexion an evanescent bloom at the expense of health and often even life. The gouty person, instead of going to Homburg or undergoing a proper system of diet for a time, generally takes some quack advertised remedy, and it weakens his constitution, and ruins his health as a result. Indeed, the Legislature helps the quack to kill people by its three-halfpenny stamp of approval, for all quack remedies are protected by "Royal Letters Patent." I believe that is what the stamp implies; at all events, it is what the quack says it does, whether it does or not. The milkman who dilutes his wares with water is prosecuted, and the publican who waters his spirit soon finds himself face to face with the law. But the quack can claim virtues for his poisons that they do not possess, and the law pats him on the back and helps him to sell his vile compounds that daily insiduously kill the ignorant and unwary.—*Gentleman's Magazine.*

Poisoned by Cloudy Household Ammonia.—Desmond Joseph Forde Bourne, a child nearly five years of age, son of the Rev. J. H. Bourne, of Broome Rectory, near Hagley, has died as the result of drinking "Scrubb's Cloudy Household Ammonia." Mustard-and-water, chalk-and-water, and other emetics were administered, but the child did not rally, and expired on Monday night last.

The Trinidad "Medical Act."—The "Medical Act" has recently been the subject of a correspondence in the *Port of Spain Gazette*, where a correspondent signing himself "Nemesis," in the course of a lengthy letter, asks whether the Government does not perceive that "indifference to the rights and privileges for which the druggists have paid, which by a long term of study and much expense they have justly earned, and for which they fairly seek protection, serves but to engender carelessness as to the qualities of the drugs they dispense, and the manner in which they are compounded, a carelessness for minor details which, small in themselves, nevertheless exert a tremendous power for good or ill accordingly as they are observed or disregarded." It is claimed to be to the interests of the physicians also to uphold the dignity of the men to whom they entrust the lives of their patients, and to lend their assistance to the protection of the druggists whenever it comes within their power to do so.

IRISH NEWS.

Death of Madam Ruppert.—Madame Anna Ruppert, whom the Pharmaceutical Society of Ireland prosecuted some three years ago at Dublin for selling a face wash which contained poison, and against whom a conviction was recorded, died recently of consumption at the age of thirty-two. The deceased had amassed a fortune by the sale of her "facial bleach," but the prosecution referred to practically destroyed her trade.

Another Limited Company.—Messrs. Maxwell, Greer and Co., pharmacists, Londonderry, have converted their concern into a private limited company with a capital of £25,000. The new directors are Messrs. William Maxwell and Stewart Greer. A new compounding department has been added, which is under the management of Mr. Samuel S. Hall, M.P.S.I. The company has secured the services of Mr. W. J. Donnell as secretary.

A Chemist's Assistant Fined.—A Killucan druggist named O'Callaghan, and his assistant, Joseph Mangan, have been prosecuted at the local Petty Sessions for selling arsenic without having first mixed it with soot or indigo as required by the Sale of Poisons Act, and with having neglected to enter the sale in the poisons book. The summons against the proprietor of the shop was dismissed and that against the assistant was divided into two parts, viz., the improper sale, and the failure to record the transaction. The first was dismissed for want of evidence. The defendant pleaded guilty to the second charge, and was fined £50, reduced to 5*s.* and costs, and cautioned as to the future.

Last week a number of city and provincial chemists tendered for the supply of medicines to the Fermoy Union. The tenders ranged from 26*s.* 6*d.* to 54*s.* 5*d.* for the same articles. In one case the same drug was priced at 1*d.* and 3*s.* 6*d.* per lb. respectively. Messrs. O'Ryan and Co., Tipperary, who tendered the lowest, were appointed contractors.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION.

The third summer meeting and botanical demonstration of the session was held in the Pharmaceutical Society's House, 36, York Place, Edinburgh, on Wednesday, July 15, at 8.30 p.m., Mr. James McBain, President, in the chair. There was a large number of plants, including collections sent by Mr. Alexander Sutherland from Unst, Shetland, and by Mr. Donald McEwan from Limekilns, Fife. The Unst collection was remarkable for the great brilliance of the colours, indicating its affinity to the rich-coloured Scandinavian flora.

Dr. McEwan's collection included *Dipsacus sylvestris* and *Melilotus alba*. In the unavoidable absence of Mr. William Duncan, the plants were described by Mr. Hill.

On Friday, July 17, the third botanical excursion took place to the Marl Pitt Pool, Craigcrook. About twenty members left Princes Street, west end, in cabs at 8.20 p.m., and after fully exploring the locality of the Pool, under the guidance of Mr. Hill, returned to town by road. Among plants collected were:—*Symphytum officinale, Epilobium palustre, Equisetum palustre, Stellaria graminea, Galium palustre, Sparganium simplex, Stratiotes aloides, Salix alba*, with galls of *Nematus gallarum; Salix phylicfolia*, with galls of *Nematus pedunculis;* and *Urtica dioica*, with galls of *Cecidomyia urticæ, Polygonum bistorta, Lemna minor*, etc.

One plant which puzzled the quidnuncs for a time, and was ultimately spotted by Mr. C. A. Macpherson, was *Lotus major*, in flower.

The company was favoured with fine weather, and the trip was greatly enjoyed.

NEW REMEDIES.

[*The notes given under this heading embody recent suggestions in therapeutics. They cover both new drugs and preparations, and old ones under new aspects. The word "parts" is used to represent parts by weight, both for solids and liquids.*]

Nitro-Glycerin in Gall-stone Colic.—Dr. Lindsay Turnbull (*Lancet*, 1/96/353) records a case in which the administration of nitro-glycerin tabellæ gave almost immediate relief in colic of hepatic origin. It is suggested that the nitro-glycerin relaxes the spasms of the gall bladder and ducts.

Cocaine in Quinsy.—A strong solution of hydrochlorate of cocaine, freely applied to the affected tonsil, has been found by Dr. Hingston Fox to be a valuable remedy in true quinsy. He relates a case in which the tonsil was first cleansed with soda-water, a grain of cocaine hydrochlorate was dissolved in half a drachm of water, and nearly the whole of the solution applied to the tonsil and surrounding parts. The next day the swelling had lessened and swallowing was easy; the day after the patient was convalescent. The treatment appears to be useless in ordinary tonsillitis (*Lancet*, 1/96/354).

Lactic Acid Locally for Facial Epithelioma.—Bloom strongly recommends the application of lactic acid for this disease. It is applied in the following manner:—A little pure silica is worked up in a mortar with sufficient lactic acid to form an adhesive paste. This is then applied to the affected surface twice daily for the first week, then once a day. The acid appears to attack only the morbid tissue, leaving the healthy flesh unharmed. The author has employed this method with success for eight years (*Rev. de Thérap.*, lxiii., 407, after *Med. Age*).

EXCHANGE—OFFERS AND WANTS.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Books, etc.

For sale.—'Pharmacopœia,' 1885; 'Appendix, 1890, both for 3s. 6d., good condition. Also Ear Speculum, new, Maw's, Fig. 130; list price, 13s. 6d., will accept 10s. 6d.—Roberts, Pharmacist, Lewisham.

'Pharmaceutical Journal,' from 1886 to 1895; two numbers missing; what offers? Thorpe's 'Organic and Inorganic Chemistry,' new, 2s. 6d. 'Key to Flowering Plants,' 1s.—Spes, 20, Rosefield Street, Leamington.

A book of 130 Well-tried Recipes for Chemists and Druggists, comprising well-selected formulæ for general, remedial, veterinary, toilet, and everyday preparations. Post free, 1s. 6d.—Tully, Chemist, Hastings.

"Pharmaceutical Journals," 13 volumes, all clean, bound in cloth, from 1872 to 1878 and 1881 to 1888; what offers?—Sewell, 409, Norwood Road, S.E

Miscellaneous.

India-rubber Mats, manufacturers' surplus, bargains, one each, 30 in. by 24 in., 15s., and 36 by 24, 16s. 6d., unlettered; 33 by 24, lettered "Drug store"; 36 by 24, "Store prices."—"Chemist," 4, Commercial Road, Peckham, S.E.

Part Soiled Patents.—2 1s. 1½d. Whittens's embrocation, 1s. 2d.; 3 1s. 1½d. Welch's pills, 1s. 9d.; 4 1s. 1½d. Enouy's, 2s.; 5 1s. 1½d. Hunt's aperient, 2s. 6d.; 2 1s. 1½d. Rackham's, 1s. 4d. 1 1s. 1½d. Marshall's cerate, 6d.; 2 oz. oleum cumini, 1s. 6d.; 4 oz. oleum pimentæ, 3s.; 12 oz. oleum carui anglic, 5s. 6d; 1 lb. oleum cassiæ, 7s. 6d.—Redhead, Long Bennington, Grantham.

Sticky Fly-Papers, about 17 gross, best make, to clear, 3s. 9d. per gross, carriage paid; sample free, sample gross, 4s.; in splendid condition.—Whyte, 95, Humberstone Road, Leicester.

A few bottles Swift's specific (liquid). Lowest price to—Swinbank, Chemist, Bedale.

For Sale, entire fittings of a first-class pharmacy, including drawers, counter, dispensing ditto, splendid wall-case, length 15 ft. 7 in., height 8 ft. 5½ in., window-enclosure, &c.; together or separately.—Wilson, Lenton, Nottingham.

Set Albo-Carbon Gas-Burners, two window (two lights each), centre pendant (six lights), dispensing counter (one light), all perfect, 15s.—Sanders, Chemist, Sutton, Surrey.

What offers per dozen for Judson's 6d. and 1s. gold paint, Nurse Powell's pills and hair-restorer? Send stamped addressed envelope for list of patents.—Key, the People's Chemist, Pontypridd.

Whole or part of 6 dozen small, 6 dozen large, Fellows's Syrup, stamped original boxes at 31s. and 54s.—Sanderson and Co, Chemists, Fox Street, Preston.

Mortars only: Nos. 10, 2s. 9d.; 12, 4s. 6d.; and 14, 7s. 6d. (this is a grand mortar, 17 in. diameter); packages, 3d.; first postal order.—Insull, Chemist, Hanley.

Photographic.

Quarter-plate camera, rapid doublet lens, stops, shutter, telescopic metal tripod, slide, changing-box and bag, extra wide angle lens, complete in leather case; cost £10; maker Pumphrey; £5.—Griffiths, Kidsgrove, Staffs.

WANTED.

Last editions, cheap, Muter's 'Analysis'; Emerson Reynolds' 'Organic Chemistry'; Cripp's 'Pharmacy'; Whiteley's 'Chemical Calculations.'—Lurcock, 21, High Street, Sutton, Surrey.

PHOTOGRAPHIC DARK ROOMS.

[Dark rooms, which are free to customers in most cases, are provided by the following chemists, who also stock photographic materials. Any additions to, or corrections of, the following list should be sent to the Editor.]

ALDERSHOT: E. H. Orange, 25, High Street.
ARBROATH: J. S. White, 57, Guthrie Port.
BIRMINGHAM: Southall Brothers and Barclay, Broad Street Corner.
BOSCOMBE: Tame and Co.
BOURNEMOUTH: S. Hardwick, 21, Commercial Road.
BOURNEMOUTH: F. E. Bilson, 1, Lansdowne Crescent.
BOURNEMOUTH: William Jones, 254 and 256, Old Christchurch Road.
BRAINTREE: Row and Son, High Street.
BRIDLINGTON QUAY: J. V. Mainlrize, 9, King Street.
BUXTON: W. Pilkington, 11, Market Place.
CANTERBURY: E. Bing and Son, St. George's Street.
CHESTER: G. Kemp, 59, Bridge Street.
CHICHESTER: Edwin Thorp.
CLEVEDON: J. H. Hart.
CONWAY: L. Jones Lancaster Square.
DUMFRIES: A. Turner, Buccleuch Street.
HACKNEY, N.E.: W. Sharman, 247, Mare Street.
HARROGATE.—A. Atkinson, 16, Regent Parade.
ILKLEY: G. W. Worfolk, Chemist.
IPSWICH: Wiggin and Son, 34, St. Matthew's.
JERSEY: F. G. De Faye, 21, David Place.
KESWICK: T. W. Townley, Market Square.
LANCASTER: Wyatt and Co., Stonewell.
LEICESTER: John L. West, 3, Market Street; Joseph Young, 16, Gallowhee Gate.
LINCOLN: David S. Wark, 370, High Street.
LONDON: A. D. Rae, 6, Railway Place, Fenchurch Street, E.C.
LOWESTOFT: Fryer and Co., The Pier Pharmacy.
MALDON.—Arthur W. Heaver, 64, High Street.
MANCHESTER: W. Maskew, 451, Stockport Road.
MARLOW, BUCKS: William Baxter, Dispensing and Photographic Chemist.
MIDDLESBROUGH: Middleton and Co. Chemists, opposite the Grand Hotel.
MIRFIELD: Charles Crook, Easthorpe.
MORECAMBE: J. J. Fell, 59, Queen Street.
NEWBURGH, FIFE: A. W. Shirras, Dispensary.
REDHILL: W. H. Fowler, 2, Station Road.
RHYL: G. R. Lawrence, High Street.
RICHMOND: Rex Blanchford, 34, Hill Rise.
RICHMOND (Yorks): Walton and Co.
RIPON: H. B. Rudd, 29, Westgate.
ROCHDALE: William Bamford, 242, Yorkshire Street.
ROCHESTER: F. J. Muskett, Guildhall Pharmacy.
ROTHESAY: W. B. Jamieson, 64, Montague Street.
SCARBOROUGH: John Whitfield, 113, Westborough, and on the Spa.
SOUTHAMPTON: W. Martin, 112, High Street.
SOUTHEND-ON-SEA: G. R. Dawson, 42, High Street.
SOUTHPORT: J. R. Cave, 52, Nevill Street.
SOUTHPORT: Henry Ball, 121, Lord Street.
STOKE-ON-TRENT: J. H. Adams and Co., High Street.
SUNDERLAND: John Walton and Son, 298, High Street West.
TEWKESBURY: A. Enoch, 124, High Street.
TEWKESBURY: L. L. Stroud, 131, High Street.
TORQUAY: E. A. Holloway, 34, Fleet Street, and 50, Union Street.
UTTOXETER: A. Parker, High Street.
VENTNOR, I.W.: J. W. Littlefield, High Street.
WINDERMERE: R. H. Barker, 13, Crescent Road.
WORCESTER: W. T. Horniblow, 33, Sidbury.
WORTHING: A. B. Cortis, 30, South Street.

NEW BOOKS AND NEW EDITIONS.

Gout and its Cure. By J. Compton Burnett, M.D. 2s. 6d. (James Epps and Co., Ltd., 48, Threadneedle Street, E.C.)

Deafness and its Curative Treatment. With chapters on Noises, Giddiness, Gouty Rheumatic, Catarrhal, Nervous Deafness, etc., and analysis of 600 cases successfully treated. By Litton Forbes, Surgeon to St. Andrew's Eye and Ear Hospital. Eighth Edition. 1s. 3d. (H. Renshaw, 356, Strand, W.C.)

Presiding last week at an inquest in Cork, on the body of an old man who killed himself by swallowing rat poison, Mr. Coroner Blake strongly condemned the existing legislation which permitted certain poisons to be sold without registering the sale. The division of poisons into two schedules was a mistake. To be particular about the sale of poisons at all the one regulation should apply to all.

for aiding and abetting, was ordered to pay the costs of the Court, and Roper the same on the cross-summons.

DIARY OF THE WEEK.

Secretaries of Societies are requested to send notices of forthcoming meetings not later than Wednesday in the previous week.

Tuesday, August 3.
Pharmaceutical Society of Great Britain.
General Purposes Committee.
Finance Committee.
Benevolent Fund Committee.
Wednesday, August 5.
Pharmaceutical Society of Great Britain.
Council Meeting.

MARRIAGE.

Evans—Dodd.—July 27. At West Derby Parish Church, by the Rev. W. H. Harpur, E. Michael Evans, pharmaceutical chemist, of Cardiff, to Mary, daughter of T. Dodd, Esq., West Derby, Liverpool.

PERSONAL.

Dr. Whitaker, L.A.H., Medical Superintendent of Health, Belfast, has been appointed lecturer in sanitary science in the Queen's College, Belfast.

Mr. Stanley Harrington, J.P., director of the Drug and Chemical Company, Cork, has been appointed a director of the Munster and Leinster Bank.

LATE ADVERTISEMENT.

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By Privy Councillor Professor Oscar Liebreich, M.D.

(*Regius Professor of Pharmacology, University of Berlin.*)

It has oftentimes been pointed out, and that, too, with reference to mineral waters, that the first condition of therapeutic efficacy is the constancy of the remedy employed. In the case of natural mineral waters this point is of the greatest importance. The aperient waters offer the one sole exception in regard to this constancy among our natural mineral springs. These are formed by impregnation of the natural basins which supply the mineral constituents. From this, as observation teaches us, there arises an extraordinary inconstancy of the chemical constituents. The aperient waters, therefore, form an exception to the mineral springs proper. For medical purposes it is absolutely necessary, in prescribing this water, to know the dose. It has happened not infrequently that a wineglassful of aperient water has been shown to contain the same amount of mineral constituents as the practitioner would, from the analysis, expect to be present in a tumblerful. It is obvious, therefore, that neither the practitioner nor the patient can form a correct opinion in this manner; and under these circumstances it may even happen that an unexpectedly great degree of concentration may do harm by useless irritation of the intestines. There is a further disadvantage arising from changes in mineral constituents, so that, instead of the sulphates which the water should contain, chlorides are present in an injurious amount. The opinion has very often been expressed that the bottling of such waters should be under scientific control, so that their proper constitution should be ensured exactly in the same way as that of other medicines is regulated by the Pharmacopœia. It is, therefore, a matter for high satisfaction that the aperient water, "Apenta," from the Uj Hunyadi springs in Ofen, has been placed under State control. The Royal Hungarian Chemical State Institute (Ministry of Agriculture) has undertaken this charge, and therefore it is now possible to obtain a water which is free from injurious extraneous waters infected with organic substances. The analysis has been published by Professor Liebermann, Director of the said Institute. The proportion of sulphate of soda to sulphate of magnesia is 15·432 to 24·4968 in the litre, so that this water is to be classed with the best aperient waters, and may be pronounced one of the strongest. Owing to the constancy of the Apenta water ensured by the State guarantee, that confidence in aperient waters which had been lost will be revived in favour of this important therapeutic agent. The constancy of the Apenta water makes the use of it indicated not only as an occasional purgative, but in systematic courses of treatment. It is particularly recommended for the regulation of tissue change in the most diverse diseases in obesity, chronic constipation, portal obstruction, hæmorrhoids. Whether the lithia contained in this water is of any therapeutic importance is at present doubtful, but its presence is a distinctive feature in the analyses.

Professor Oscar Liebreich, M.D., *Therapeutische Monatshefte*, Berlin, June, 1896.

The APOLLINARIS COMPANY, Limited,

4, Stratford Place, Oxford Street, London, W.

MARKET REPORT.

[*Specially compiled for the Pharmaceutical Journal.*]

[*The quotations here given are in all cases the lowest net cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.*]

LONDON, AUGUST 8.

In spite of the holidays a fair amount of business has been done in the produce markets during the past week, althongh changes in price have been neither numerous nor important. In the chemical market carbolic acid is lower, tartaric and citric acids firm, whilst cream of tartar has again declined in value. Benzol continues to advance in price, whilst copper sulphate is lower. Crude camphor is quiet, and a parcel sold to-day at a further decline upon the last auction rates. Refined camphor is unchanged, but very firm. No further changes have occurred in the alkaloidal market, morphine and codeine being firm, quinine neglected, and cocaine as last reported. Glycerin remains firm, and menthol neglected. The drug sales to-day were the smallest that have taken place for a long time, and were speedily got through. There are few changes to note amongst the drugs. Gamboge and carcarilla bark are cheaper. Benzoin is selling at low rates whilst good dragon's blood is scarce, Ipecacuanha is quiet, opium firm, Columbia root dearer, and sarsaparilla steady. Cod liver oil has been in fair demand. Jamaican beeswax is barely steady, colocynth is very firm, whilst acacia gum is neglected. The other markets do not present any features of interest, except that Hotchkiss' peppermint oil sold at low rates in auction. Full details will be found below:—

ACACIA (GUM).—At to-day's drug sales an average supply was offered, but little business resulted. A fair proportion of picked *Trieste* gum were included in the catalogue, but the only lot sold was a case of pale medium gum, for which £6 15s. was paid, offered without reserve. Yeliowish grain was bought in at £7, and fair *Turkey* sorts at 72s. 6d. to 75s. The supply of *Bushire* so-called insoluble gum is said to be much reduced, and there has been a fair demand, especially for the better kinds. The current quotations are:—Fine picked, 21s. to 23s.; good sorts, 14s. to 16s.; ordinary sorts, 12s. to 13s. 6d.; reddish picked, 15s.; and block, 8s. to 10s. per cwt.

ACID CARBOLIC.—The market is still weakening, especially for forward delivery. Since our last report the quotations for *crystal* acid have again declined, and are now as follows:—*Crystals*: 34° to 35° C., 6¼d.; 39° to 40°, 6¾d.; 39° to 40° C. (*detached crystals*), 7¼d. per lb. *Crude* is a trifle firmer at 2s. for 60 per cent., whilst 75 per cent. is worth 2s. 4d. per gallon. *Liquefied* and *cresylic* are worth 1s. to 10d. per gallon respectively.

ACID, TARTARIC.—The market is firm without any change upon the last quotation. Makers of *English* acid still ask 1s. 3d. per lb, whilst *foreign* brands of acid (both in *powder* and *crystal*) are quoted at 1s. 2d. to 1s. 2¼d. per lb. At the drug sales eighteen bags of Cape *argol* sold at 48s. to 53s. for pinkish, and 35s. to 42s. 6d. per cwt. for greyish.

ACONITE (JAPAN).—No enquiries are made for this drug whatever. To-day 20 bags of fair quality root were bought in at 22s. per cwt.

ALOES.—An average supply was shown at the drug sales, but the only variety to attract any attention was *Cape* aloes, of which about twenty cases sold at steady rates, 24s. being paid for fair hard, 22s. for medium ditto, and 20s. down to 18s. for ordinary to dull drossy. Several lots of *Curacao* aloes in boxes were offered, but all were bought in, 15s. 6d. being refused for fair quality part livery. Ten cases of *Zanzibar* aloes in tins sold at 40s. per cwt. for treacly brown.

AMMONIACUM (GUM).—Absolutely without enquiry. At the drug sales two cases of good pale loose almonds were bought in at 50s. per cwt.

ANNATTO SEEDS—Are still very slow of sale. To-day eleven packages of ordinary dull *Madras* seed were bought in at 3d. per lb.

ASAFŒTIDA (GUM).—A fair business is said to have been done privately during the last week at quotations ranging from 40s. to 70s. for good to fine quality. During the last month 112 packages have been delivered, making the stock 580 packages, against 910 packages at the corresponding period last year.

BENZOIN (GUM).—A very moderate supply was offered to-day, and little inquiry was shown. *Sumatra* gum was represented by 127 cases, the majority of which was bought in, but £6 to £6 7s. 6d. was paid for 20 cases of fair seconds, medium centres, but very false packed sides. *Siam* gum was all bought in, good free pale medium almonds at £35, and palish siftings in block at 90s. per cwt. Fair *Palembang* seconds in cases were bought in at 40s. per cwt.

BORAX.—There is no change in the Syndicate quotations, which remain 19s. for *crystals*, and 20s. for *powder* on the spot. Second-hand holders offer at about 6d. per cwt. less. At the drug sales ten cases of refined *Borax* ("Townsend's" brand) sold at 18s. per cwt.

BIRDLIME.—A parcel of sixteen cases of Japanese *birdlime* was offered to-day, of which four sold at 6½d. per lb.

BUCHU LEAVES—Are slow of sale. At the sale the *long* variety was again shown after a somewhat prolonged absence, but no demand was shown, and dull narrow quality was bought in at 6d. to 7d. per lb. Fair yellowish *round* leaves were bought in at 3d. per lb.

CALUMBA ROOT—Is much dearer. During the last few days sales of fair sorts have been made privately at 20s. per cwt., an advance of several shillings, whilst 40s. has been paid for good picked yellow root. To-day 10 bags of the latter kind were bought in at 42s. 6d. per cwt.

CAMPHOR (CRUDE).—Privately little or no business has been done since our last report, and quotations remain quite nominal. At the drug sales, 149 cases of *Formosan* camphor sold at a decline of 7s. 6d. to 10s. upon the rates paid a fortnight ago, and in this instance changed hands at 107s. 6d. to 110s. per cwt.

CAMPHOR (REFINED).—The position remains as last reported, *English* refiners still quoting 1s. 6d. for 1-ton, 1s. 6½d. for ½-ton lots, and 1s. 7d. per lb. for smaller quantities of *bells* and *flowers*, with *squares* at 1s. 7d. and proportionate rates. To-day 20 cases of refined *Japan* camphor were bought in at 1s. 8d. for ¼ and ½ oz. tablets, and 1s. 7d. for 2 lb. ditto.

CANNABIS INDICA.—No business was done in this article at the sales. For good greenish clean tops 3½d. per lb. was asked, whilst ordinary dusty brown sorts were bought in at 2d. per lb.

CARDAMOMS.—Only 10 cases were shown to-day, and these few were bought in, bold bleached *Mysore*, slightly split, at 3s. 4d. per lb.

CASCARILLA—Is several shillings cheaper. At the drug sales about 140 bales were offered, a fair proportion of which sold at 36s. 6d. for fair greyish quill, whilst for smallish brown, 25s. to 30s. was paid, and 21s. for thin stringy ditto. *Siftings* were bought in at 28s. per cwt.

CHIRETTA.—Sixty-three bales of this drug were bought in to-day at 3d. to 3½d. per lb.

CINCHONA.—There is little or no *crown* bark of good quality to be had on the spot, and supplies are wanted badly. At the sales two serons of fair flat *Calisaya* bark were bought in at 1s. 8d. per lb.

COAL DISTILLATION PRODUCTS.—*Toluol* is steady at 2s. per gallon for *pure*. *Benzol* is a very strong market, 2s. 10d. per gallon being now quoted for 50 per cent., whilst 90 per cent. is worth 3s. 10d. per gallon. *Creosote*, 1½d. per gallon. *Crude Naphtha*: 30 per cent. at 120° C. quotes at 1s. 1½d. per gallon. *Solvent Naphtha*: 95 per cent. at 160° C is worth 1s. 6d.; 90 per cent. at 160° C, 1s. 4½d., and 90 per cent. at 190° C., 1s. 1½d. per gallon. *Anthracene*, 13*A*, 9½d.; 13, 8¼d. per unit. *Pitch*, 32s. per ton *f.o.b.* *Tar*, 10s. 6d. per barrel for *refined* and 11s. 6d. for *crude*.

COLOCYNTH.—The market continues very firm. During the week 2s. 9d. has been again paid for good *Turkey* apple, whilst 1s. is asked for fair *Spanish*. To-day four bales of *Turkey* colocynth were bought in at 3s. per lb.

COPAIBA (BALSAM).—Good qualities continue scarce, 2s. 2d. being still asked for

Maranham. To-day a cask of bright reddish balsam was bought in at 1s. 8d. per lb.

Coto Bark.—Two bales of fair quality bark were bought in to-day at 7d. per lb.

Cream of Tartar.—A further decline has taken place in this article which is about 1s. 6d. per cwt cheaper. On the spot best white *French crystals* are quoted at 91s., whilst *German* brands of *powder* offer at 93s. to 97s. For shipment to Bordeaux, 85s. *f.o.b.* is now quoted.

Cubebs—Are very slow of sale, and in auction fair quality *Singapore* berries, slightly stalky, were bought in at 35s., small ditto at 25s. per cwt.

Cuscus Root.—Twenty-five bags were bought in to-day at 35s. per cwt.

Dragon's Blood—Is very firm. The catalogue to-day only comprised two cases, one of which, consisting of very seedy *Singapore*, being sold at £6 5s. per cwt.

Elemi (Gum)—Is quite neglected. About thirty cases of palish gum, poor aroma, were bought in at 25s. per cwt.

Ergot of Rye.—No business was doing in this article to-day, although it must be said that no good qualities were offering. A parcel of old weevily *Spanish* was bought in at 5½d., whilst 6d. was the buying-in price of fair *Russian*.

Galls.—*Persian* varieties continue very quiet, only small sales of *greens* being reported. Quotations are as follow:—*Blues*: 51s. to 53s.; *greens*, 42s. to 45s.; *sorts*, 48s. to 50s.; and *whites*, 38s. to 43s. per cwt.

Galbanum (Gum).—Three bags of fair almondy block were bought in to-day at 1s. 1d. per lb.

Gamboge—Is again easier. A parcel of fourteen cases consisting of fair mixed pipe and block all sold at £7 5s. to £7 7s. 6d., whilst good clean pipe was bought in at £10 per cwt.

Guarana—Is offering at low rates, 2s. 1d. being the current quotation for fair quality. Three cases were bought in to-day at 2s. 3d. per lb.

Honey.—A fair supply of the new crop of *Jamaican* honey was again offered to-day, and sold at full rates, 28s. 6d. being paid for good bright orange, 25s. to 25s. 6d. for clean ambery, and from 24s. down to 21s. for good brown to ordinary dark, part rather foul. A parcel of pale *Chilian* honey was bought in at 26s. to 30s. per cwt.

Ipecacuanha—Has been quiet since our last report. Privately 5s. 10d. has been paid for sound annulated *Rio* (Brazilian) root, whilst *Carthagena* (Columbian) has sold at 4s. 8d. per lb. At to-day's sales little demand was shown, the majority of the catalogue being bought in, but a few bales of *Rio* root sold at 6s. 4d. for fine picked, 5s. 9d. for fair annulated, and 5s. 4d. ordinary thin damaged. *Carthagena* root was bought in at 5s. and 5s. 6d. per lb., a bid of 4s. 5d. per lb. being refused in the former instance.

Kamala—Is fairly steady. To-day four cases were bought in at 6d., after a bid of 4½d. had been refused, whilst another parcel was also withdrawn at 9d. to 10d. per lb.

Kola Nuts.—A rather better demand was shown for this article to-day, but low prices were accepted. For fair sound *Grenada* nuts 6d. per lb. was paid, whilst 3d. was accepted for ordinary mouldy quality. A bag of *Jamaican* kolas sold at 7d. per lb. for fair quality.

Lime Juice.—Five puncheons of *Jamaica* juice sold in auction at 1s. 1d. per gallon, showing a steady market.

Matico.—Fair quality leaves were bought in to-day at 1s., and dark broken damaged at 6d. per lb.

Menthol—Very irregular in price, but generally speaking the market is quiet. The spot quotation is 9s. 3d. to 9s. 6d. per lb., and five cases were bought in to-day at the latter figure.

Musk.—Good quality is very quiet, and was all bought in to-day, first pile. *Tonquin* at 60s. to 80s. per oz. and other grades at 35s. to 55s. A tin of thick skin *Yunan* pods sold without reserve at 23s. per oz., and another of pile II. *Tonquin* pods at 40s. per oz., whilst *grain* musk was bought in at 30s. per oz.

Myrrh (Gum)—Was in very large supply and selling pretty freely. For good clean native picked gum 80s. was paid, whilst siftings (pea size) sold at 45s.; ordinary ditto at 28s. to 31s., and drossy pickings at 12s. 6d. per cwt.

Oil (Cod-Liver).—The London market is very steady, and business has been done during the week in best *Lofoten* oil at 180s. per barrel. For *Newfoundland* oil, 6s. per gallon is asked.

Oils (Essential).—*Star anise* oil is firm. On the spot sales have again been made at the steady rate of 7s. 6d. per lb. *Cassia* oil is unchanged. *Peppermint* is much lower for *H. G. Hotchkiss*, brand, 21 cases of which sold without reserve to-day at 8s. to 8s. 3d. per lb. *Japanese* oil is quiet at 6s. 6d. on the spot for 40 per cent., whilst for delivery 5s. 3d. per lb., *c.i.f.* terms., is quoted. *Dementholised* offers at 4s. 3d. on the spot, and 3s. 9d. to 4s. *c.i.f.* for delivery. At the drug sales three cases of *Ylang Ylang* sold without reserve at 2s. 9d. to 3s. per oz. In addition, several lots of essential oils were bought in to-day, including *Nutmeg*, at 3d. per oz.; *Bay*, at 2s. 6d. per lb.; *Cedarwood*, at 1s. 2d.; *Eucalyptus*, at 1s. 2d.; *Cassia*, at 6s.; *Dementholised peppermint* oil at 4s. 6d., and *Fennel* at 2s. per lb.

Oils (fixed) and Spirits.—*Castor*: *Italian* oil is very firm, 31s. 3d. to 32s. per cwt, *c.i.f.*, being still asked for best quality. *Calcutta* oil sold to-day at 2¾d. per lb. for 26 cases of *seconds*. *Cotton* is steady, *refined* oil being still quoted at £16 to £16 10s. on the spot, according to brand and package. *Coco-nut* is quiet, but steady; *Ceylon* at £22 10s., and *Cochin* at £26 15s. on the spot. *Linseed* is a trifle easier at £16 15s. in barrels on the spot. *Palm* is easier, and now quoted at £20 10s. for *Lagos*. *Olive* quotes at £29 for both *Spanish* and *Levant*. *Turpentine* is flat at a further decline, *American* spirit being now offered at 18s. 6d. on the spot. *Petroleum* is firm. *Russian* quotes at 5d. to 5⅛d.; *American* at 5⅜d. to 5⅞d., and *water white* at 6½d. to 6⅝d. per gallon.

Opium—Is firm. *Druggists'* opium quotes at 10s. to 10s. 9d. for *firsts*, with 9s. 6d. to 9s. 9d. quoted for *seconds*. *Soft-shipping* quotes at 13s. to 13s. 6d., and *Smyrna* at 9s. 6d. to 10s. *Persian* opium is very firm and very little is offering except of low quality. Quotations range from 10s. 6d. to 12s. 6d. per lb. At the drug sales four cases of *druggists'* opium were bought in at 11s. per lb.

Opium Alkaloids—Are still quoted at the advance noted last week, *morphine* being quoted at 5s. 4d. for *powder*, and 5s. 6d. for *cubes* in 1000-oz. lots, whilst the current quotation for *codeine* is 11s. 9d. to 12s. per oz., according to quantity.

Peru (Balsam)—Is quite neglected. Eight cases of genuine balsam were bought in to-day at 8s. 3d. to 8s. 6d. per lb.

Quicksilver—Is steady at unaltered rates, £6 7s. 6d. being still the importers' quotation, whilst second-hand holders ask £6 7s. per bottle.

Quince Seeds—Are unchanged in price, but without enquiry. Three bales of *Cape* seed, rather dusty and mouldy were bought in to-day at 1s. 3d. per lb.

Quinine Sulphate—Is still quite a dead-letter, the nearest value for the best brands of *German* quinine being 12½d. per oz.

Rhubarb—is quiet. To-day only 28 packages were offered, nine of which sold at the following rates:—*Canton*: Small round trimmings, 1s. 1d.; medium flat pinky, 11d.; and medium quality round and flat pickings, 9½d. per lb. *Shensi* sold at 1s. 6d. for good bold round, three-fourths pinky fracture.

Sarsaparilla—Is steady. At to-day's sale genuine grey *Jamaican* sarsaparilla sold at 1s. 7d. to 1s. 8d. for sound quality, whilst 1s. 2d. to 1s. 3d. was paid for damaged grades. *Honduras* was bought in at 1s. 1d. to 1s. 3d., and *Smilax* (Indian sarsaparilla) at 2d. per lb.

Seeds (Various).—*Coriander*: Thirty-five bags of ordinary coarse seed sold in auction at 5s. per cwt. *Cumin*: Maltese seed was bought in at 36s. to 37s. per cwt. *Strophanthus*: Ordinary *Kombé* seed was bought in at 2s. per lb.

Senna.—At the auctions to-day a good supply of *Tinevelly* leaves of new import was offered and sold at full rates, 1d. to 1¾d. being paid for ordinary brownish to fair yellowish, 2d. to 2¾d. for fair greenish, and 3d. to 4¼d. for medium to bold of good colour. *Alexandria* leaves were bought in at 1s. 1d., and *pods* at 1s. per lb.

Shellac.—The market is quiet, and in the absence of the weekly sales, little business has been done. *Second Orange* is steady with sales of *TN.* at 88s. to 89s., whilst *A. C. Garnet* is firm at 84s. per cwt. The arrival market is flat.

Tonquin Beans.—A cask of *Angostura* leaves sold without reserve at 2s. 6d. per lb.

Tragacanth (Gum).—Privately the demand has somewhat improved of late, and a fair amount of business has been done amongst the lower grades. Quotations are as follows:—Firsts, £14; seconds, £12 to £13; thirds, £10 10s. to £11 10s.; fourths, £8 to £10, and other qualities £7 10s. down to 35s. per cwt.

Wax (Bees).—Rather slow of sale, with the exception of *Jamaican*, which sold at fairly steady rates, £7 15s. to £8 2s. 6d. being paid, according to colour. *Madagascan* realised £6 12s. 6d.; *Teneriffe*, £6 2s. 6d.; *Australian*, £6 5s. to £6 12s. 6d.; and *Zanzibar*, £5 10s., subject to approval.

Newcastle Chemical Market, August 4.—The only new feature on this market is the renewed report of a Syndicate being

formed between British sulphur recoverers and the Sicilian mine owners, the object being to restrict production. So well founded is the news that the recovered article has been advanced 2s. 6d. per ton. Other chemicals are somewhat quiet at late prices. Tar products are in rather more request. Prices are:—Sulphur, £4 7s. 6d.; bleaching powder, £6 10s. to £7 10s.; soda crystals, 37s. 6d. to 45s.; caustic soda, 70 per cent., £7 5s. to £7 10s.; ash, 52 per cent., £4 5s.; alkali, 52 per cent., £5.

Manchester Chemicals and Drysalteries, August 4.—The market for heavy chemicals appears fairly steady, but for drysalteries there is only a quiet demand. Bleaching powder still tends downwards, and for export has again been quoted about 5s. lower than last week, but for home demand prices are well maintained. Local makes of yellow prussiate are quiet but firm at 7¼d. per lb., Scotch being in some cases quoted at 7¾d. Recovered sulphur has an advancing tendency, and closes at £3 17s. 6s. to £4 5s. Arsenic scarce at £24 to £25. Brown acetate is very dull at £4, *c.i.f.*, Manchester, and £4 2s. 6d. to £4 5s. at station, a large quantity having arrived from America per Ship Canal. Green copperas steady. Sulphate of ammonia continues to decline, and as low as £7 13s. 9d. has been quoted, *f.o.b.* Leith. Benzols and carbolic acid are both firm.

MISCELLANEOUS NEWS.

Mr. Gladstone on Chemists.—In his very natural anxiety to say something pleasant to the members of the Pharmaceutical Society who lately visited him at Hawarden, Mr. Gladstone perhaps allowed his courtesy to get the better of his logic. It was wonderful, he told his guests, when one thought of the millions and millions of prescriptions that were made up, how few mistakes were made. If Mr. Gladstone meant fatal mistakes, he was no doubt right, but, as a matter of fact, the proportionate number of prescriptions containing poisons sufficiently deadly to kill or cause serious illness in small doses must of necessity be a very moderate one, while it is to be further remembered that it is just this class of prescription which would suggest the need of special caution, even to the most careless of dispensers. The number of chemists' mistakes which make little or no perceptible difference to the patient one way or the other may be, for all Mr. Gladstone can know, a much larger one than he supposes. But his visitors cannot have failed to appreciate his encouraging reference to the fact that he does not owe his status as a "dead politician" to the blundering of any of their colleagues in trade.—*World.*

"Truth" as a Truth-Teller.—At Mildenhall, in Suffolk, bills have been posted offering a reward of £10 for evidence leading to the conviction of any keepers who have killed dogs by means of poison. In the meantime, it has been shown that some of the dogs in the neighbourhood have been poisoned through partaking of Battle's vermin killer, which was put down by others, not keepers, with a view to destroy rats. This vermin killer contained 23 per cent. of strychnine, and ought to be scheduled as a poison. Any one can buy it for 3*d.*, without being called upon to sign when purchasing it (not true, Mr. "Truth"). As regards keepers, they ought under no circumstances to be permitted to place poison in woods or coverts, unless surrounded by a wall or a pailing, which would prevent all incursions of dogs. If they do, they should be sent to prison—and their masters too, if they knew and winked at what was being done.—*Truth.*

Case of Accidental Poisoning at Dorking.—Mr. Coroner G. F. Roumieu held an inquest on July 24 on the body of Mrs. Anna Scragg, aged 72, who died from poison accidentally administered by her daughter, Mrs. Ann Stanbridge, with whom she was residing. Mr. Blakeney who had been attending, had prescribed some medicine, and also a lotion. On the previous Tuesday Mrs. Standbridge had gone upstairs to see the deceased, who asked for her medicine. She picked up a bottle from the table, poured out a dose, and her mother took it. Deceased remarked, "Oh, how hot." Witness said, "It was not hot last night," and then all at once saw what she had done, and cried, "Oh, mother, what have I done? I have given you the wrong medicine!" Witness looked at the bottle from which she had taken the dose and saw that it was labelled "Lotion." She and her mother were talking at the time, and the two bottles stood on the same table. Witness at once called her daughter and sent for a neighbour. She then gave deceased some hot salt water, which made her vomit slightly, and sent for a doctor. The two bottles were not alike, one being much larger than the other; but they were both the same colour. She had applied the lotion twice previously. Deceased expired at 11.30 p.m. the same evening.—Mr. Hugh Blakeney, surgeon, said he had been attending deceased for a long time previously. The medicine he had prescribed consisted of quinine and bicarbonate of potash, and the liniment of belladonna. The bottle containing the latter was labelled "For external use only." He was sent for at midday on Tuesday, and found deceased almost unconscious. He applied restoratives, and tried the same expedient a few hours later. Subsequently he gave deceased an injection, but she sank while he was present. The cause of death was belladonna poisoning.—Replying to the Foreman, witness said that as far as the law was concerned, doctors could supply poisonous lotions in bottles of any kind or colour, providing they labelled them "For external use only" or "Poison."—The Foreman said it was his opinion, and that of several of his brother jurors, that the bottles should be distinctive in colour and shape.—The Coroner thought the fact of having bottles so absolutely distinct as those in question would be sufficient to prevent the wrong one being used, and he could only come to the conclusion that if the poison had been in any other kind of bottle the occurrence would equally have happened. He could not understand Mrs. Stanbridge taking up the wrong bottle, seeing that it was almost as distinctive as a blue or any other coloured bottle. There was, however, no reason for a single moment to suppose that it was anything but a pure accident. He had had several similar cases. The death of Professor Tyndall occurred under very like circumstances, Mrs. Tyndall administering a poison to her husband in mistake for a medicine. If people had to use both medicine and lotion, it seemed very absurd that they should persist in keeping them on the same table. The bottles should always be kept separate, so as to reduce the risk to a minimum.—A verdict of "Death by misadventure" was returned.

International Homœopathic Congress.—The fifth quinquennial International Homœopathic Congress was opened on August 4, at the Queen's Hall, Langham-place. The previous meetings were held at Philadelphia, 1876; London, 1881; Basle, 1886; and Atlantic City, U.S.A., 1891. The honorary President is Dr. Dudgeon; the acting President, Dr. Pope, of Grantham; Dr. Hughes, of Brighton, being the general secretary; and Mr. Dudley Wright the local secretary for the metropolis. The object of the Congress is to further the study and practice of homœopathy, and to report progress. There was a large gathering of members from various countries.—Dr. Pope devoted his opening address to an examination of the influence of the therapeutic teaching of Hahnemann in 1796 on the study and practice of medicine in 1896. Dr. Villars, of Dresden; Dr. Léon Simon, of Paris; Dr. B. James, of Philadelphia, and Dr. M'Clelland, of Pittsburgh, were appointed Vice-Presidents of the Congress.—Dr. Hughes gave a *précis* of the reports, which had been sent in from 12 nationalities and three British dependencies, of the progress made since the last meeting of the Congress. Austria was described as stationary, but Belgium was advancing, and now had 100 practitioners. France reported no increase in the number of practitioners, but an extension of principles among the laity. In Germany there were now 400 professors of homœopathy. The number of practitioners in Great Britiain was 300, showing no advance. In India homœopathy was spreading among the natives. There were 50 homœopathic doctors in Italy, 20 in Portugal, 50 in Russia, and 20 in Switzerland. The United States was still the stronghold of the movement, there being upwards of 10,000 practitioners, 120 associations, 59 general hospitals, and 75 special hospitals.—A discussion ensued on the condition and prospects of homœopathy at the present time and the best means of furthering it. Dr. Dudgeon, Dr. Villars, and Dr. McClelland were the invited speakers, and among those who continued the discussion were Dr. Brosal, of St. Petersburg, Drs. Hayward, Duffield, Dittman, Simon iClarke, and Goldsbrough.—Dr. Brosal suggested that as this was the centenary of Hahnemann's introduction of the principles of homœopathy it was a fitting opportunity to erect a handsome memorial to him in place of the dilapidated tomb at Montmartre, Paris. The suggestion was warmly approved, and will be further discussed today.—The Congress then adjourned.

EXCHANGE—OFFERS AND WANTS.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Books, etc.

'Pharmaceutical Journal,' from 1886 to 1895; two numbers missing; what offers? Thorpe's 'Organic and Inorganic Chemistry,' new, 2s. 6d. 'Key to Flowering Plants,' 1s.—Spes, 20, Rosefield Street, Leamington.

Miscellaneous.

Retort-stand; drum-sieves; Mellin's emulsion; copper ribbon-bath; cheap.—Webster, West Bromwich.

Bargains.—56 lbs. compd. liq. powder, lumpy, do well for horse-powders, 3d. per lb.; 3 doz. 5-gall. square glycerine and castor-oil tins, offers; 4 25-gall. cod-liver oil barrels, tin lined, offers; 3 gross Prince of Wales' feather stoppered smellings (green), offers; Melin's patent capsuling-machine (cost £3) for 30s.; ¾ cwt. of arsenic; 2 pairs of steps, one 6-tread, one 9.—Holloway, Torquay.

Electric Machine, glass cylinder, Leyden jars, complete, in strong case; cost £5; offers, cash.—Moore, c/o Gerring, Chemist, Witney, Oxon.

Musk, surplus stock, good grain, ⅛ oz. sent receipt P.O. for 6s., ¼ oz. 11s.; cost treble.—North British Drug Co., 52, Virginia Street, Glasgow.

Soda-water Trolley, on which a boy of eight can easily convey 3 dozen syphons and cases, 35s.; also an extra strong one, 47s.; carriage paid.—Arthur and Co., Chemists, Cambridge.

Photographic.

Lens, rapid euryscope, 9 by 7, Perken, Son and Rayment "Iris"; good condition; £5 5s.—Copestake, Chemist, Bagshot.

WANTED.

A few bottles Swift's specific (liquid). Lowest price to—Swinbank, Chemist, Bedale.

The Extension of Science Teaching.—Speaking last week at the annual distribution of the prizes gained at the Merchant Venturers College, Bristol, Sir Edward Fry, B.A., F.R.S., said he was not going to say one word against the old-fashioned literary system of education, which possessed in its way considerable merit, but there was ample room for education of another description, mainly derived from the study of the physical sciences which, if properly taught, were capable of training the intellect in many directions. There had been a great extension in the laws of physics in the last fifty years, and with it the consequent numerous effects upon their life. The extension of knowledge in electrical science and chemistry, especially with respect to the organic branch, and of the branches of knowledge opening out therefrom was immense and brought fully to mind the axiom of Hippocrates in his first book "Life is short, art is long." Sir Edward afterwards distributed the prizes.

PERSONAL.

Mr. Thos. Tierney, chemist and druggist, Marple, has passed the 1st M. B. examination of the Victoria University.

LATE ADVERTISEMENTS.

Assistants Wanted.

London, W.—Assistant for first-class business. Must be qualified and able to furnish unexceptionable references. Good salary to suitable man. Chemicus, "Pharm. Journal" Office, 5, Serle St., W.C.

China.—A Qualified Assistant. Not over 30 years of age. Accustomed to first-class Retail and Dispensing business. References must bear strict investigation. 4 years' agreement. Passage paid both ways. Address, with full particulars, stating salary expected, China, care of A. S. Watson & Co., Ltd., 8, Fenchurch Buildings, E.C.

Pontypool.—Assistant, accustomed to light mixed country business. Good Counterman, able to manage, &c. Permanency desirable. Hours easy; half holiday weekly. No Sunday duty. Applicant would live in, but apartments provided out-door. A Junior also required for September. Send carte and all particulars to Ford, Pharmaceutist, Pontypool.

PHOTOGRAPHIC DARK ROOMS.

[*Dark rooms, which are free to customers in most cases, are provided by the following chemists, who also stock photographic materials. Any additions to, or corrections of, the following list should be sent to the Editor.*]

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ARBROATH: J. S. White, 57, Guthrie Port.
BIRMINGHAM: Southall Brothers and Barclay, Broad Street Corner.
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LEICESTER: John L. West, 8, Market Street; Joseph Young, 16, Gallowhee Gate.
LINCOLN: David S. Wark, 370, High Street.
LONDON: A. D. Rae, 6, Railway Place, Fenchurch Street, E.C.
LOWESTOFT: Fryer and Co., The Pier Pharmacy.
MALDON.—Arthur W. Heaver, 64, High Street.
MANCHESTER: W. Maskew, 451, Stockport Road.
MARLOW, BUCKS: William Baxter, Dispensing and Photographic Chemist.
MIDDLESBROUGH: Middleton and Co. Chemists, opposite the Grand Hotel.
MIRFIELD: Charles Crook, Easthorpe.
MORECAMBE: J. J. Fell, 59, Queen Street.
NEWBURGH, FIFE: A. W. Shirras, Dispensary.
REDHILL: W. H. Fowler, 2, Station Road.
RHYL: G. R. Lawrence, High Street.
RICHMOND: Rex Blanchford, 34, Hill Rise.
RICHMOND (Yorks): Walton and Co.
RIPON: H. B. Rudd, 29, Westgate.
ROCHDALE: William Bamford, 242, Yorkshire Street.
ROCHESTER: F. J. Muskett, Guildhall Pharmacy.
ROTHESAY: W. B. Jamieson, 64, Montague Street.
SCARBOROUGH: John Whitfield, 113, Westborough, and on the Spa.
SOUTHAMPTON: W. Martin, 112, High Street.
SOUTHEND-ON-SEA: G. R. Dawson, 42, High Street.
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MARKET REPORT.

[*Specially compiled for the Pharmaceutical Journal.*]

[*The quotations here given are in all cases the lowest net cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.*]

LONDON, AUGUST 13, 1896.

There is little of interest to report in the produce market since our last report. In the chemical market carbolic acid is rather firmer, citric acid scarce, tartaric acid steady, and cream of tartar still neglected. Crude camphor is barely steady, whilst the refined article shows no change. Permanganate of potash is still scarce and dear, whilst copper sulphate continues on the down line. There is nothing of interest to report amongst the fine chemicals. Menthol is neglected, glycerin steady, and alkaloids generally unchanged, quinine being quite a dead letter, morphine and codeine quiet and caffeine unaltered. In the drug market opium is quiet, whilst other raw drugs show no important changes. Matico leaves are scarce and dear. The oil markets show few changes except that peppermint oils are very flat, whilst bergamot and rosemary are inclined lower. Shellac is about steady, spices generally unchanged, and benzole very strong. Full details will be found below:—

ACACIA (GUM).—There has been a moderate inquiry for picked gum, but the high prices still asked by holders are prohibitive. A few sales of ordinary *sorts* at steady rates are reported. The following are the current quotations:—Fine picked, 21s. to 23s.; good sorts, 14s. to 16s.; ordinary ditto, 12s. to 13s. 6d.; reddish picked, 15s.; and block, 8s. to 10s. per cwt.

ACID, CARBOLIC.—The market is steady at practically unchanged rates, but there is said to be a fair inquiry for *crystals*. The current quotations are as follows:—*Crystals*, 34° to 35° C., 6¼d.; 39° to 40° C., 6¾d.; 39° to 40° C. (*detached crystals*), 7¾d. per lb. *Crude* is still quoted at 2s. for 60 per cent., whilst 75 per cent. is worth 2s. 4d. per gallon. *Liquefied* and *cresylic* are both worth 1s. per gallon.

ACID, CHRYSOPHANIC.—A firm market at full rates, 25s. being still quoted for small quantities. The stock is very small.

ACID, CITRIC.—There is still little to be had for prompt delivery, whilst the second-hand stock is very limited. Makers of *English* acid quote 1s. 2¾d. nominally, whilst for second-hand acid 1s. 2½d. would be accepted. *Concentrated Lime Juice* still quotes at £13 5s. to £13 10s. per pipe, *f.o.b.*, Messina.

ACID, TARTARIC.—The market is steady, with quotations unaltered. *English* acid in manufacturers' hands is still quoted at 1s. 3d. per lb., whilst *foreign* brands both in *powder* and crystal are worth 1s. 2d. to 1s. 2¼d. per lb.

AMMONIA COMPOUNDS.—*Sulphate* is still quiet, and grey 24 per cent. now offers at £7 12s. 6d. on the spot, whilst *Hull* quotes at £7 16s. 3d., *Leith* prompt at £7 12s. 6d., and *Beckton* terms at the same figure. *Sal ammoniac* is unchanged at 37s. for *firsts*, and 35s. for *seconds*. *Carbonate* is unchanged at 3d. in *casks*, 3⅛d. in *kegs*, and 3¼d. in *jars*, whilst *powder* is quoted ¼d. per lb. above these rates.

CAMPHOR (REFINED).—There have been no changes in the refiners' quotations. *English* makers' prices are 1s. 6d. for 1 ton, 1s. 6½d. for ½ ton, and 1s. 7d. per lb. for smaller quantities of *bells* and *flowers*, with *squares* at 1s. 7d., and proportionate rates.

CAMPHOR (CRUDE).—On the spot the market is very quiet, with quotations tending easier if anything. Nominally, 95s., *c.i.f.*, is the quotation for *Formosan* camphor, August to October shipment, but there are no buyers.

COAL DISTILLATION PRODUCTS.—*Toluol* is much dearer, being now quoted at 2s. 11d. per gallon for *pure*. *Benzol* is again a very strong market, 2s. 11d. per gallon being now quoted for 50 per cent., whilst 90 per cent. is worth 4s. per gallon. *Crude naphtha*: 30 per cent. at 120° C. quotes at 1s. 2d. per gallon. *Solvent naphtha*, 95 per cent. at 160° C is worth 1s. 10d.; 90 per cent. at 160° C., 1s. 4½d., and 90 per cent. at 190° C. 1s. 1½d. per gallon. *Anthracene*, 13*A*, 9½d.; *B*, 8¼d. per unit. *Pitch*, 32s. per ton *f.o.b.* *Tar*, 10s. 6d. per barrel for *refined*, and 11s. 6d. for *crude*.

COCAINE—Is still quoted at the advance announced a fortnight ago, *hydrochlorate* being worth 13s. 7d. per oz. for 100 oz. lots in *tins*, whilst 1 oz. *bottles* are quoted 3d. per oz. more.

COCO-BUTTER—Is decidedly dearer. At the monthly sales 200 cases (representing 20 tons) of *Cadbury's* make sold at prices ranging from 13½d. to 14½d., the average being about 14d., which shows an advance of 1½d. compared with the prices paid at the previous sale.

COLOCYNTH—Continues very firm, with business doing privately in good *Turkey* apple at 2s. 9d. per lb. The stock of sound quality is only moderate. Fair *Spanish* offers at 1s. to 1s. 2d. per lb.

COPPER SULPHATE—Is a very dull market at a further decline in value, and the spot quotations are now £16 10s. to £17 15s. per ton, the latter figure being for the *Anchor* brand.

CREAM OF TARTAR—The market continues to weaken, and prices show a decline of 1s. to 2s. per cwt. On the spot best white *French Crystals* now offer at 90s. per cwt., whilst for *German* brands of *powder* 92s. to 95s. is quoted. *French crystals* offer for shipment from Bordeaux at 82s. to 83s. per cwt., *f.o.b.*

GALLS.—The market for *China* galls is unchanged, and no business seems to have been done. *Persian* galls are quiet but steady at the following rates:—*Blues*, 51s. to 53s.; *greens*, 42s. to 45s.; *sorts*, 48s. to 50s.; and *whites*, 38s. to 43s. per cwt.

GENTIAN ROOT—Is quiet, the nominal spot quotation for good *French* root being 19s. to 20s., whilst for arrival 17s. 6d. per cwt. *c.i.f.* terms is quoted.

GINGER.—*Jamaican* root was in very good demand at the weekly auctions, a further advance taking place. For medium to good bright 93s. to 111s. was paid, whilst 80s. to 89s. was the figure for ordinary to medium scraped, and 76s. to 76s. 6d. for ordinary to medium brown. *Cochin* root continues slow of sale, and the whole of the *rough* kinds were bought in, medium and small washed at 33s. to 34s. per cwt. Of native kinds, bold limed sold at 55s. to 59s.; medium ditto at 47s. 6d. to 48s., and common small to medium at 36s. to 40s. 6d. per cwt. In addition, *Bengal* was bought in at 21s., limed *Japan* sold at 15s. 6d. to 16s., ditto slightly mouldy at 15s. 6d., whilst *African* was bought in at 25s. per cwt.

GOLDEN SEAL ROOT—Offers cheaply at 1s. per lb. on the spot.

GLYCERIN.—The market is very firm, makers' prices for double distilled *German* glycerine being 75s. to 76s., whilst second-hand holders still offer at 70s. to 72s. per cwt.

INSECT FLOWERS.—The new crop of *flowers* is offering at the following rates:—*Open*, 94s.; *half closed*, 115s. 6d.; *cultivated closed*, 157s. 6d.; and wild closed at 185s. per cwt. *f.o.b.*

IPECACUANHA—Is steady, *Carthagena* (Columbian) root being quoted privately at 4s. 8d. to 4s. 9d., whilst Rio (Brazilian) root is said to have sold at steady rates.

MASTIC (GUM).—Fine pale offers at 1s. 6d. per lb. on the spot. Fair bright gum recently sold privately at 1s. 5d. per lb. The demand is very limited.

MATICO.—Good quality leaves are badly wanted and hardly procurable, the market value being 1s. 6d. to 2s. per lb.

MENTHOL—Is very quiet, and quoted nominally at 10s. 3d. to 10s. 6d. per lb. on the spot for good white *crystals*.

OIL (COD-LIVER).—The market is quiet, and quotations are rather easier. Best non-congealing *Norwegian* oil is now offering at 170s. per barrel on the spot.

OILS (ESSENTIAL).—*Star anise* oil is firm, business having been done at 7s. 6d. per lb. on the spot. *Peppermint* oils are all slow of sale, *H. G. Hotchkiss'* brand being offered at 8s. 3d. (and perhaps 8s.) per lb. on the spot, whilst *Japanese* oil testing 40 per cent. of menthol is quoted at 6s. to 6s. 3d., and *dementholised* at 4s. to 4s. 3d. per lb. on the spot. *Rosemary*: Quotations for the new crop of *Dalmatian* have slightly advanced, and 185s. *f.o.b.* per cwt. is now quoted. *Bergamot*: The market is rather easier, fine quality being now offered at 7s. 10s., and good ditto at 7s. 4d. per lb. *f.o.b.*, Messina.

OTTO OF ROSES.—The new crop is now

arriving in London, but the quotations have not yet been fixed. From all indications they are, however, expected to be lower.

OILS (FIXED) AND SPIRITS. — *Castor. Italian* oil is quiet but steady, best quality being quoted at 31s. 3d. to 31s. 9d. per cwt. *c.i.f.* terms. *Cotton*: The market is quiet at a decline of 5s. to 7s. 6d. *Refined* oil being now quoted at £15 12s. 6d. to £16 5s. on the spot according to brand and package. *Coco-nut*: The market is quiet, but steady, *Ceylon* being still quoted at £22 15s., and *Cochin* at £26 10s. on the spot. *Linseed* is firm at an advance of about 5s., oil in barrels being now quoted at £17 2s. 6d. to £17 5s. on the spot. *Palm* quotes at £20 10s. for *Lagos. Olive* is unchanged at £29, both for the *Levant* and *Spanish. Turpentine* is steady at 18s. 6d. to 18s. 7½d. for *American* spirit on the spot. *Petroleum* is firm at 5d. to 5⅛d. for *Russian*, 5⅜d. to 5⅞d. for *American*, and 6⅛d. to 6⅜d. per gallon for *water white.*

OPIUM—Is quiet, and quotations show no change from those reported last week. The only variety for which there seems to be a demand is soft shipping. *Persian* is very firm for good grades, but low quality is rather easier.

ORRIS ROOT.—Reports from Italy state that the weather has been so wet during the past week that the collection of the root has been greatly interfered with. The price of best new *Florentine* root is expected to be about 56s. 6d. per cwt., *c.i.f.* terms.

QUICKSILVER.—The market is quiet, but steady. Importers still quote £6 7s. 6d., whilst second-hand holders offer at £6 7s. per bottle.

SCAMMONY.—The market is very quiet, for all varieties. Fair quality *root* sold recently at 37s. 6d. per cwt. For Turkish virgin *resin*, 32s. is asked for *firsts*, and 30s. for *seconds*, but there are no inquiries.

SEEDS.—*Corriandes*: *English* seed was withdrawn at the spice sales, whilst 105 bags of low, coarse *Bombay* sold at 6s. per cwt. *Caraway*: *River Plate* seed sold at 23s. per 464 lbs.

SHELLAC.—Privately the demand has been quiet, but prices were maintained, 88s. having been paid for *TN Orange.* A very moderate supply was offered at the sales, which were resumed this week, and of this about two-thirds sold at fully steady rates, as follows:—*Second orange*: Cakey to good bright free, 87s. to 89s.; pale free, 87s.; strong red cakey and flat liver, 86s. A portion of the catalogue consisted of shellac which was offered without reserve, some of it having been damaged by water. For this parcel a very good demand was shown, whilst sound *TN Orange* realised 89s. per cwt. *Garnet* sold without reserve at 59s. to 60s. for damp blocky "snake," and 76s. to 78s. for good horny *AC. Button* sold at 78s. to 85s. for blocky resinous.

SPERMACETI—Is rather firmer, and for pale refined *American* 1s. 5d. per lb. is now asked on the spot.

SPICES (VARIOUS).—*Cloves*: In auction all the *Zanzibar* were bought in except 10 bales of bright, for which 2¼d. per lb. was paid. Picked *Penang* were bought in at 7d. to 7½d. per lb. *Mace* is quiet. *Penang* sold at 1s. 7d. for bold heavy red; part wormy, and at 1s. 4d. to 1s. 5d. for ordinary to medium ditto. For broken *Travancore* 1s. 1d. to 1s. 2d. was paid, whilst *West Indian* sold at 10d. to 1s. 1d. for pickings; 1s. 2d. to 1s. 5d. for medium to good; and 2s. for fine pale. *Pimento* remains quiet but steady, 2⅛d. being paid in auction for common, 2⅜d. for medium, and 2¼d. for fair. *Capsicums*: Dull *East Indian* were bought in at 18s. 6d.; good bright *Cochin* at 21s., and long red *Japan* at 30s. per cwt. *Chillies* were bought in at 36s. to 47s. 6d. for ordinary brown to fair bright *Zanzibar*, whilst *Japan* sold 45s. for good bright red. *Pepper* of all varieties was mostly bought in. *Arrowroot* sold at 1⅝d. for fair *St. Vincent.*

TURMERIC.—The market remains quiet, but prices are fairly steady. At the weekly sales ordinary *Bengal* was bought in at 7s., and bold dull wormy mixed *Madras* at 8s. per cwt.

WAX.—*Japan* is a very firm market at an advance of about 4s. per cwt, 40s. having been paid privately for good pale *squares. Paraffin* quotes at 1¾d. to 2d. for *crude*, and *refined* at 2¼d. to 3¾d. per lb.

NEWCASTLE CHEMICAL MARKET August 11.—This chemical market on the whole is rather more active. Sulphur: Still firmly quoted, and large sales made. South Durham salt: Somewhat firmer at 9s. 6d. per ton for common use. Prices are:—Bleaching powder: £6 10s. to £7 10s. Soda crystals: 37s 6d. to 45s. Caustic soda: 70 per cent., £7 5s. to £7 10s. Soda ash: 52 per cent., £4 5s. Alkali: 52 per cent., £5. Sulphur: £4 7s. 6d. per ton.

MANCHESTER CHEMICALS AND DRYSALTERIES, August 11.—The publication of the Board of Trade Returns does not tend to re-assure the members of the chemical trade as to its immediate future. The shares of the principal companies are beginning to suffer, but this, of course, must not be taken as a criterion of bad trade all round. Generally speaking, heavy chemicals are steady, but concessions are given where orders are to be had. Sulphate of ammonia is neglected, and sulphur (recovered) is the only article which appears to be on the advance, in all probability owing to the combination of home and Sicilian makers. To-day's quotations are £4 5s. to £4 10s. Yellow prussiate is firm here for Lancashire make at 7½d., but foreign is quoted much lower, in some cases 6¾d. to 6⅞d. Sulphate of copper is easier at £16 10s. to £17, with few sales. Epsom salts, 65s. for commercial and 80s. to 90s. for refined. Glaubers at 25s. per ton, bags, on rails, Manchester. Alum is easier for export, but for home consumption unchanged, at £5 per ton for loose lump, and £5 12s. 6d. ground in bags. Chlorate of soda unchanged at 5¾d. per lb. for export and 6d. home consumption. Brown acetate of lime dull at £4 2s. 6d. to £4 5s., delivered station here for Welsh and £4, *c.i.f*, American. Bicarbonate of soda ranges from £6 15s. to £7 for 1 cwt. kegs, and industrial bicarbonate (for mineral waters) £4 5s. per ton, bags, and £5 5s. to £5 10s. per ton, 1 cwt. kegs, on rails at works, Northwich. Carbolic acid steady. Green copperas firm. Sal ammoniac unchanged at £37 per ton, firsts, £35, seconds. Acids dull and cream of tartar again lower.

LIVERPOOL MARKET REPORT, August 12.—Canary-seed: Turkish seed is unchanged for spot parcels at 28s. per 464 lbs.; 50 bags of Spanish have sold at 44s. Kola nuts: 12 packages of dried made 2d. per lb. Chillies: Common Sierra Leone fruit have been selling at 24s. per cwt. Cochineal: Teneriffe black grain has been selling at 1s. 3d. per lb., but is now held for 1s. 4d. Beeswax: A parcel of sun bleached sold at £8, Gambia at £7 per cwt., and 10 packages of Sierra Leone at £6 to £6 15s. per cwt. Castor oil is in rather better demand for spot parcels at the following prices:—Calcutta, 3⅛d. to 3¼d. per lb.; French, first pressure, 2⅞d. to 2⅝d.; Madras, 2½d. to 2⅝d.; and Belgian, 2½d. Olive oil is selling moderately at well-sustained prices; Spanish has been making £29 per tun. Linseed oil firm at slightly higher price of 17s. 6d. to 19s. per cwt. Cotton-seed oil is unaltered at 15s. 6d. to 16s. per cwt. for Liverpool refined, and for American, 16s. to 16s. 6d. Spirits of turpentine is steady with moderate sales at 19s. 3d. per cwt. Petroleum: Russian, 5½d. per gallon; American, 6¼d. to 7⅛d Sal ammoniac: Firsts, 37s. per cwt. Sulphate of ammonia: £8 1s. 3d. per ton. Bleaching powder: £6 17s. 6d. to £7 2s, 6d. per ton for hard. Copperas has risen. Lancashire to 38s. per ton, Welsh to 36s Sulphate of copper is quiet at £16 7s. 6d. per ton. Cream of tartar has dropped to 94s. per cwt. for finest cream, but buyers are scarce. Potashes: 20s. 3d. to 20s. 6d. per cwt. Pearlash: 35s. per cwt. Prussiate of potash: 7¾d. per lb. Bichromate of potash: 4⅝d. per lb. Chlorate of potash: 4½d. per lb. Saltpetre: 23s. 6d. per cwt., 23s. barrels. Bicarbonate of soda: £16 15s. per ton. Soda crystals: £2 7s. 6d. per ton. Borax: 20s. per cwt., 21s. powder. Hyposulphite of soda: £5 10s. per ton. Caustic soda: 70 per cent., £7 7s. 6d. to £7 10s.; 60 per cent., £6 7s. 6d. to £6 10s. per ton. Nitrate of soda: 7s. 10½d. to 8s. 1½d. per cwt.

Advertisements in the Pharmaceutical Journal.

ALL ADVERTISEMENTS must be sent to the Office, 5, Serle Street, Lincoln's Inn, W.C., where replies to prepaid advertisements may be addressed, and will be redirected free of charge. Postal Orders should be made payable at Lincoln's Inn, W.C., to STREET BROS. Cheques should be crossed "London Joint Stock Bank."

PREPAID ADVERTISEMENTS.—Advertisements of Assistants Wanted, Apprenticeships, For Sale, Partnerships, Businesses for Disposal, Businesses Wanted, and Premises to Let are charged as follows:—Fifty words or less, 3s. 6d. Each additional ten words or less, 6d.

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FREE ADVERTISEMENTS.—Advertisements of Assistants seeking Engagements will be inserted Free of Charge, subject to conditions mentioned in each number of the Journal.

PERSONAL.

Mr. C. E. Ashby, recently appointed Demonstrator in the Pharmaceutical Society's School of Pharmacy and a former Bell Scholar, has just passed the Intermediate Examination in Science, first division, at the University of London.

MISCELLANEOUS NEWS.

The Vaccination Commissioners have held their last meeting, and the voluminous report which they are expected to issue will be very shortly published. Indeed, the Home Secretary has announced that the volume will be in the hands of members within the next four weeks. If the report cannot be presented before Parliament rises, it will be made in "dummy," by express permission of Her Majesty, and will be circulated during the recess. The daily press has already began to speculate on the nature of the report, and seems to assume that the outcome of this lengthy and costly commission, which Sir Charles Dilke stigmatised as a "public scandal," will be a verdict for the anti-vaccinationist.

Exit the London Teaching University.—The order for the second reading of the University Commission Bill was on Thursday discharged and the Bill withdrawn. This was on account of the opposition which found concrete expression in a "blocking" notice by Mr. Arthur O'Connor (East Donegal).

The End of the present parliamentary session is fixed for the 15th inst. If one were allowed to sum up after the manner of Toby, M.P., the summary would read:—Business done, practically nothing generally; absolutely nothing pharmaceutically.

Notices for Next Session of Parliament are multiplying, and Sir John Lubbock has secured a prominent place for his prospective motion relative to the hours of labour in shops. He will ask the House to say that the hours of labour are unnecessarily long, and that the subject is one calling for the serious and early attention of Ministers.

Arsenic in the Soup.—At the High Court of Justiciary at Inverness, on Tuesday, Ellen Macleod or Beaton, a widow, from Elginshire, was charged with administering poison to Thomas Hay, a farmer, of Alves, to whom she acted as housekeeper, and eight other persons. The prisoner pleaded not guilty. The evidence for the prosecution showed that Hay had invited several guests to dinner on Sunday, July 12, and that the prisoner declined to cook for them. A violent quarrel ensued, and another woman came to cook the broth. The party on partaking of it were all seized with violent illness and vomiting. Dr. Meiklejohn, Edinburgh, said that as the result of his analysis of a sample of the broth he found arsenic to the amount of $1\frac{3}{4}$ grain present in one plate of the soup, and stated that 2 grains would have been sufficient to cause death. The prisoner denied having put any poison into the barley and water which she had put on to cook. Prisoner was found guilty, by thirteen to two, of administering poison with intent to disable, but not to murder, and a sentence of fifteen months' imprisonment was passed.

Vitriol for Beer.—On Monday, August 3, an inquest was held at Heckmondwike, relative to the death of Thomas Walker (36), night-deputy at Joan Royd Colliery. It appeared from the evidence that the deceased went into the engine-house of the colliery about 1.30 on Saturday morning, and was helped to some porter and ginger beer by the engine-man, who had it in an ordinary breakfast flask. Subsequently Walker and another workman named Ingham entered the room clandestinely in the temporary absence of the engine-man, and suspecting that a quart jug which they found behind the cylinder contained the beverage they were in quest of, Walker drank heartily and his colleague slightly. The jug, however, contained vitriol. Walker suffered great agony, but declined to have a medical man sent for until Saturday. He remained in great pain until Sunday evening, when death supervened. Ingham, who only got a slight taste of the liquid, was very little the worse for the adventure. It was stated that the vitriol was kept for use in cleaning the brass taps of the steam-gauge and to prevent corrosion, and that the deceased had no business in the engine-house at all.—A verdict of "Death by misadventure" was recorded, no blame being attached to anyone.

Death from Overdose of Morphine.—On August 11, Mr. W. Whiston, County Coroner, held an inquest at the Midland Hotel, Nottingham, touching the death of Beatrice Harriett Ada Chivers, 19 years of age. She had recently suffered very severely from neuralgia, and appeared to have been taking morphine pills. Dr. W. H. Turton spoke to being called in to see deceased. He found her in bed fast asleep, and it was impossible to rouse her. The pupils of her eyes were partly dilated. He thought it advisable to empty the stomach. The symptoms pointed to opium poisoning in some form or other, but whether she had taken laudanum or morphine he could not say. He remained with her until she died. A box of pills, unlabelled, which had been found in deceased's pocket, contained morphine. The Coroner having reviewed the case, the jury, after a brief deliberation, returned a verdict to the effect that the deceased died from taking an overdose of opium through misadventure.

Prosecution under the Dentistry Act at Cardiff.—At the Cardiff Police Court, Templar Malins, Woodville Road, Cardiff, has been summoned for a breach of the Dentists Act, 1878. Mr. Belcher appeared for the British Dental Association, and Mr. Jackson for the defendant. Mr. Belcher said that the summons was taken out under the Dentistry Act of 1878, the charge being created by Section 3 of the Statute. The parties were simply proceeded against under the latter part of the section "for taking an addition or description implying that they are registered under this Act or specially qualified to practise dentistry." The defendant, it appeared, carried on a business at 107, Woodville Road, Cardiff, and on his chemist's shop he had the words "Popular Dentistry." A gentleman employed by the Dental Association had gone to the place, and stated that he wanted something doing to his teeth. This gentleman went in, had a card given him on which were stated defendant's charges for extracting teeth, both with and without gas. Mr. Jackson, for the defendant, admitted the facts as stated, but urged in mitigation of the offence that defendant had had forms printed to be given to his patients, which showed that there was no desire on his part to make them believe that he was a fully qualified dentist. Defendant was fined £5 and costs. In another case under the same Act, brought against G. F. Bamber, Castle Road, Cardiff, Mr. Lewis Morgan appeared for the defendant. It appeared that defendant had been previously convicted at Barrow-in-Furness. No evidence was called to-day, the offence being admitted, and defendant was fined £20 and costs.—*South Wales Echo.*

Corrosive Sublimate for Carlsbad Salts.—The Liverpool Coroner (Mr. T. E. Sampson) held an inquiry on August 7 concerning the death of James Mawdsley Currey, forty-four years of age, who resided at 115, Edge Lane. It appeared from the evidence that the deceased was a gentleman of no occupation, and for a number of years had suffered from general debility, for which he had been constantly under medical treatment. He was very short-sighted and absent-minded. He kept in his medicine cabinet in his room Carlsbad salts and perchloride of mercury, the latter of which he used for killing insects on plants. On Thursday week last he took some of the perchloride of mercury by mistake for the salts (which are similar in appearance), owing to his short-sightedness. He at once became very ill, and died on Wednesday from the effects of the poison. It was stated in evidence that the deceased had never shown the slightest tendency to suicide, and that he was in no trouble of any sort. He had not been able to explain how he came to take the poison.—The jury returned a verdict of "Death from misadventure."

New Science Buildings at Bristol.—According to the calendar of the Merchant Venturers' Technical College, Bristol, which has just been issued, considerable additions have been made to the equipment of the College, including an Evershed's Ohmmeter and generator, a Crompton's Potentiometer, and a Wattmeter for the physical laboratory.

The Proposed Pasteur Institute.—The Home Secretary having been asked to receive a working men's deputation, which desired to lay before him arguments in opposition to a licence being granted to the proposed Pasteur Institute in this country, has caused the following reply to be sent; "With reference to your letter of the 31st ult., asking the Secretary of State to receive a deputation on the subject of the registration of the proposed institute of preventive medicine for the performance of experiments on living animals under the Act 39 and 40 Vic. cap. 77, I am directed by the Secretary of State to express regret that he cannot at present consent to receive the deputation in question.—(Signed) Henry Cunynhame."

EXCHANGE—OFFERS AND WANTS.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Books, etc.

'Pharmaceutical Journals' from January, 1888, to present date. What offers?—Maurice Smith, Lea Farm, Kidderminster.

A book of 130 Well-tried Recipes for Chemists and Druggists, comprising well-selected formulæ for general, remedial, veterinary, toilet, and everyday preparations. Post free, 1s. 6d.—Tully, Chemist, Hastings.

OFFERED—(*continued*).

Miscellaneous.

Bougie and Pessary Moulds, perfect condition, cheap.—Jeeves, Chemist, Brighton.

Offers.—Rotary pill-machine and piper, cost £15 15s., good order.—Whitelam, Chesterfield.

For Sale.—Two show-jars, 27 in., No. 900 Lynch's catalogue; two magnificent ebonised, French polished stands for ditto, octagon, with heavy mouldings, circular top, 13¾ in. high, 16¾ wide; good as new; the lot cost £15 4s. net; also 35 glass show-jars (lettered), 9 in. high. What offers?—Nicholl, 25, High Street, Belfast.

Entire fittings; drawers, counter, desk, and seven cases, dispensing-counter, sponge-case, marble top and mirror, shelves, blinds, carboys, etc.—Smith, Chemist, Rushden, R.S.O.

Suicide of a Chemist at Leeds.—The Leeds City Coroner held an inquiry on the 28th ult. into the death of Henry Charles Morris, 32, chemist, who committed suicide by taking a dose of prussic acid. Deceased's father had died in an epileptic fit, and the deceased had had several attacks, and the next he was told might prove fatal. This caused him to be depressed, and his sister found him in the shop dead. A verdict of suicide during temporary insanity was returned.

The Edinburgh District Chemists' Trade Association.—The photograph taken at Loch Lomond of the excursionists connected with the above Association, and which also included a number of Glasgow pharmacists, may be had, price 1*s.* 3*d.* each, including postage, from C. F. Henry, 1, Brandon Terrace, Edinburgh, or W. L. Currie, 223, Byres Road, Dowanhill, Glasgow.

The Sale of Poisons by Druggists in Dublin.—It seems strange that chloroform is not among the poisons which druggists are compelled to enter in "the sale of poisons book," and this deficiency in the law is prominently exemplified by a lamentable fatality which occurred recently in Dublin. The facts as deposed at the inquest were briefly as follows:—Mrs. Kerrigan suffered severely from toothache or neuralgia, and after using laudanum, etc., locally without effect, sent a little girl with a written message to a druggist—"Please give bearer small bottle of chloroform," signed "A. Kerrigan." The druggist asked the girl whether it was required for toothache, and on receiving an affirmative reply gave her a small bottle containing half an ounce of chloroform. This, it appeared, was mixed by the deceased with a small quantity of whisky, and swallowed. Some hours later she was found in a comatose state, and before she reached the hospital was dead. At the inquest it was stated that the druggist was quite within his legal right in selling half an ounce of pure chloroform without an order from a medical man, and the Coroner in his address to the jury acknowledged this, but remarked that a man might act within his legal rights and yet might be sufficiently incautious as to incur severe criticism. He further stated that in his opinion no drug of the insidious character of chloroform should be sold in large and poisonous doses without restriction. The jury, after finding that death was due to accidental poisoning b chloroform taken to relieve neuralgia, added to their verdict the following: "We consider that the sale of chloroform under circumstances such as were detailed in this case without an order from a doctor is dangerous, and ought to be discouraged."—*Lancet.*

The Microbe in the Pie.—Dr. Stevenson, the analyst to the Home Office, has given some disturbing evidence in the inquest at Crawley upon the domestic servant who died of a sickness consequent upon a certain supper. A rabbit pie had figured upon the supper table. After having examined a portion of it, Dr. Stevenson had no hesitation in attributing the fatality to this dish. The rabbits of which it had been made were infested with bacteria. Now, rabbits are such a cheap and common article of diet that it is of some importance to have a reliable answer to the question suggested by Dr. Stevenson as to how far the animal is healthy and fit for food. In the course of his experience he has found live rabbits to swarm with micro-organisms to an extent that subsequently caused death. The bacteria are generally killed by cooking; but this cannot be taken as a complete safeguard. This is alarming enough, at first blush. But, after all, perfect immunity from danger is not to be had in any act of life. Rabbits are consumed in enormous quantities, and that so few suffer any ill consequence must be taken to argue that to like rabbit pie is to run somewhat less risk than the traveller who goes much by railway. Dr. Stevenson, however, must have discovered a microbe of wonderful vitality if it survives the culinary temperature applied to rabbit pie.—*Newcastle Daily Chronicle.*

LATE ADVERTISEMENT.

Business for Disposal.

GOOD-CLASS Dispensing and Homœopathic Business in main thoroughfare of fashionable seaside town in Lancashire. Returns last year over £800. Shop handsomely fitted and well stocked. Cash purchasers only. For particulars and to treat, apply to G. J. Healy, Chartered Accountant, Wigan.

FEDERATION OF LOCAL PHARMACEUTICAL ASSOCIATIONS.

The annual meeting of the above Federation was held at the Adelphi Hotel, Liverpool, on Tuesday evening, July 28. The following Associations were represented, viz.:—

Glasgow and West of Scotland by W. F. Currie; Liverpool Chemists'; M. Conroy, Liverpool Pharmaceutical Students', T. S. Wokes; Midland Pharmaceutical Association, R. D. Gibbs: Midland Pharmaceutical Assistants' Association, C. Thompson; Plymouth Pharmaceutical Association, C. J. Park; Manchester Pharmaceutical Association, H. Kemp; Cambridge Pharmaceutical Association, Peck.

Dr. Symes, Mr. J. Rymer Young, and Mr. J. Rutherford Hill were also present, Mr. H. Kemp (Chairman), presided.

In the unavoidable absence of the Hon. Sec. (Mr. R. Glode Guyer, of the London Chemists' Assistants' Association) the late hon. sec., Mr. C. Thompson, read the minutes and the annual report and balance sheet, all of which were adopted, after some little discussion and slight alteration, and ordered to be entered on the minutes. The report showed that eleven associations had joined the Federation, and several others would probably join shortly.

The following officers were then elected for the ensuing year, viz.:—

Chairman, W. F. Currie, Glasgow;

Hon. Sec. and Treasurer, T. S. Wokes, Grassendale, Liverpool.

A vote of thanks having been passed to to Mr. R. Glode Guyer for his services during the past year, a long and animated discussion took place on the following subjects, viz.:—

1. The future work of the Federation.
2. Sir J. Lubbock's Early Closing Bill.
3. Lord Herschell's amendment of the Companies Bill.

The result of the discussion was an almost unanimous feeling in favour of both the Early Closing Bill and the amendment of the Companies Bill.

MARRIAGE.

Alcock—Granger.—On the 12th inst., at King's Norton Church (by the Rev. C. W. Barnard, M.A., Vicar) Frank H. Alcock, F.I.C., F.C.S., to Clara J. Granger, daughter of Mr. Alfred Granger, Brandwood End, King's Heath.

SPECIAL NOTICE.—**STUDENTS' NUMBER OF THE JOURNAL.**—The 'Pharmaceutical Journal' for September 12 next will be specially devoted to educational matters of interest to pharmacists. Information will be given respecting the various institutions in Great Britain and Ireland where courses of instruction are provided for pharmaceutical students, and the secretaries of such institutions are requested to furnish full particulars without delay. All communications should be addressed to the "Editor," 17, Bloomsbury Square, W.C.

MARKET REPORT.

[*Specially compiled for the Pharmaceutical Journal.*]

[*The quotations here given are in all cases the lowest net cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. Is is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.*]

London, August 20, 1896.

The produce markets have been fairly active during the last few days, considering the season, but changes are not very numerous. In the Chemical Market carbolic acid is firm at unchanged rates, tartaric and citric acids ar steady, whilst cream of tartar has again declined in value. Benzol is still a very strong market, whilst copper sulphate is quite neglected. Amongst the fine chemicals glycerin is very firm at an advance in some instances. Camphor, both crude and refined is unchanged, whilst the only point of interest in the alkaloid market is the easy rates at which quinine is offering. Menthol is quiet. At the drug sales held to-day few changes occurred. Cascarilla bark sold at irregular and in some cases higher rates, acacia gum was neglected aloes were steady, the same applying to gamboge and dragons blood. Crotonseed was in good demand, ipecacuanha quite neglected, and myrrh and sarsparilla without enquiry. The opium market is quiet, but the monthly cinchona sale passed off briskly for all varieties. Jamaican beeswax is dearer, whilst Japan wax is maintained in value. The principa, feature in the essential oil is the advance in star anise and the decline in citronella and lemon grass oils. Full details will be found below :—

Acacia (Gum).—*Persian* gum is firm for all varieties, but business has been mostly restricted to the lower grades, common sorts having sold at 12s. 9d. to 13s. 6d., and blocky at 9s. 6d. to 10s. The current quotations are as follows :—Fine pale picked, 21s. to 22s.; good sorts, 14s. to 16s.; ordinary ditto 12s. to 13s. 6d.; reddish picked, 15s.; and block, 8s. to 10s. per cwt. At to-day's drug sales only 23 packages were shown, none of which sold, pale grain *Trieste* being bought in at £6 10s., and medium yellowish picked ditto at £7, whilst medium mixed *Soudan* sorts were also withdrawn at 70s. per cwt.

Acid Citric—Is unchanged in price, but the market is very firm, there being still a difficulty in getting prompt supplies. *English* acid quotes at 1s 2¾d., whilst second-hand holders ask 1s. 2½d. per lb. At the drug sales two casks were offered and bought in at 1s. 3d. per lb.

Aloes.—*Cape* aloes is steady, but all the better qualities were bought in, fine hard at 24s. 6d., good ditto at 24s., and slightly drossy at 23s. per cwt. Of 32 cases offered, 17 sold, 21s. being paid for slightly drossy seconds, 20s. for softish ditto, and 18s. to 19s. for ordinary mixed quality. *East Indian* aloes was represented by thirty kegs of *Socotrine* aloes, ten of which sold at 80s. for rather soft of good flavour. Nearly 400 packages of *Curacoa* aloes were offered, and about 220 of these changed hands, 30s. being paid for fair brown livery, 17s. to 19s. for medium capey, and 16s. 6d. down to 11s. 6d. for fair to common dull ditto.

Ambergris.—The only lot sold in auction was a $1\frac{3}{4}$ oz. tin of common quality, for which 20s. per oz. was paid. Other grades were bought in at 45s. and 65s. per oz.

Ammoniacum (Gum)—Still fails to attract any buyers. To-day twenty packages were shown, and all bought in : good pale drop at 55s., medium ditto (part loose, part block) at 50s., fair almondy lump at 32s., and loose drossy mixed gum at 25s. per cwt.

Annatto Seeds—Are quite without inquiry. To-day good *Madras* seed was bought in at 5d. and ordinary bricky ditto at 3d. per lb.

Asafœtida (Gum).—There does not appear to have been any business doing in this article during the last week, but the market is firm, quotations ranging from 45s. to 70s. for medium to good grey and pinkish *Bombay* block.

Bell Fruit. — Ten bags of this drug, broken, but of good quality, were bought in at 4d. per lb.

Benzoin (Gum)—Was in unusually large supply to-day, but the demand was very moderate. *Sumatra* gum, which was represented by 125 cases, was for the most part bought in, and no good qualities were offered. The only lot sold being 2 cases of ordinary seconds with fair centres, but very brown sides, for which £5 10s. was paid. *Siam* gum sold at £6 5s. to £6 10s. for pale siftings, part block and part loose, whilst 97s. 6d. was paid for dark almondy pickings, partly in block, and 50s. for dark siftings in block. Fine pale free *Siam* almonds were bought in at £35, and brownish ditto, part blocky, at £25 per cwt. Ten cases of good glassy *Penang* seconds with fair almondy centres sold at 90s. to 92s. 6d., whilst ordinary ditto were bought in at 80s. to 85s. per cwt. *Palembang* gum was for the most part bought in, but 39s. was paid for two cases of good almondy seconds in tins, whilst barky thirds were bought in at 27s. 6d. per cwt.

Birdlime. — Thirteen cases of *Japanese* birdlime were bought in to-day at 9d. per lb. after 4½d. had been bid.

Buchu Leaves—Were only represented by 21 bales to.day, 5 of which sold at 2¼d. per lb for fair yellowish *round* leaves, showing a steady market.

Cannabis Indica.—No business was done at the sales in this article, but it was stated that a parcel of fair greenish tops had been sold previously. Good stalky tops were bought in at 4d., and dusty brown ditto at 1½d. to 2½d., per lb.

Cardamoms.—An excellent demand was shown for this article to-day, the prices paid showing an advance of several pence per lb. *Ceylon-Mysore* sold at 3s. 2d. for fine plump pale, 2s. 11d. to 3s. for good ditto, 2s. 7d. to 2s. 9d. for medium ditto, and 2s. 4d. for small palish. *Cardamom seed* sold at 3s. per lb. for good quality, an advance of about 3d. per lb.), whilst 2s. 6d. was accepted for other grades. Ten bags, offered as *cardamom seed*, but which were spurious, being really "camphor seeds," sold at 3d. per lb.

Carraway Seed—Is firm, the current quotation for *Dutch* seed of good quality being 21s. *f.o.b.*

Cascara Sagrada—Is very slow of sale, 19s. being the nominal spot quotation. To-day 50 bags of good medium quill from San Francisco were bought in at 20s. per cwt.

Cascarilla—Is irregular in price, but good grades are dearer. At the sales about 116 bales were offered, of which 70 sold at 39s. to 42s. for good greyish quill, 25s. to 27s. for smallish brown mixed, and 20s. to 22s. for siftings.

Chiretta—Was bought in at 3½d. per lb. for good quality, whilst three bales of ordinary small, offered without reserve, sold at 1¼d.

Chamomiles—Have again advanced, and the position seems to justify the belief that prices will go considerably higher, since the new flowers are very small, the quality of the crop having been greatly affected by the prolonged spell of dry weather. At the present time spot quotations for *Belgian* flowers range from 56s. to 60s. per cwt., and as mdch as 65g. is asked for fine quality.

Cinchona.—At the monthly sales a total of 1290 packages was offered against 1442 on the previous occasion. Ceylon and Indian barks were in only small supply, but generally a good demand was shown, the greater portion of the catalogue being disposed of at fully steady and slightly higher rates, the average unit remaining however ½d. to ⅝d. per lb. The prices paid were as follows : — *Ceylon. Succirubra.* Stem chips, 1⅜d. to 2⅜d, shavings 2d. to 2⅝d. *Ledger* : Natural chips and shavings, 1 d. to 2d. ; branch, 1¼d. ; root, 1¼d. to 1½d.

renewed ditto, 2d. to 2½d. per lb. *East Indian*: Fine bold silvery *Succirubra*, 5d. to 7d. *Officinalis*: Chips and shavings, 1⅜d. to 2¾d., and renewed ditto, 1⅝d. to 3d. *Java: Ledger* stem chips, 4d. to 4⅜d.; ditto branch, 2⅞d. per lb. *South American*: Damaged *Calisaya* quills, 2d. to 3¾d. per lb. *African*: Fair quills, 2⅛d.; damaged ditto, 1¾d. per lb. At the drug sales a parcel of *Maracaibo* bark sold at prices ranging from 6d. for sound quality, 4d. for medium ditto, down to 1½d. for damaged ditto. In addition a fair demand was shown for a parcel of flat *Calisaya* bark, about 100 bales of which changed hands at 1s. 2d. to 1s. 4d. for sound, 8d. to 11½d. for medium, down to 2½d. for damaged.

Colocynth.—The market is very firm. Privately 2s. 10d. is asked for fine pale *Turkey* apple, and a parcel was held to-day for this price. Fair quality sold in auction at 2s. 7d., and broken ditto at 2s. 6d. per lb. Sound *Spanish* was bought in at 1s. 6d., and damaged *Malaga* at 9d. per lb.

Concentrated Lemon Juice—Quotes at £13 10s. to £13 15s. per pipe *f.o.b.* Messina.

Cream of Tartar—Is again lower, this week's prices showing a decline of 2s. per cwt. On the spot fine white *French crystals* offer at 88s. per cwt., whilst for *German* brands of *powder* 90s. to 93s. is asked. *French crystals* offer for shipment from *Bordeaux* at 80s. to 81s. per cwt. *f.o.b.*

Croton Seed—Is steady. A single bag of fair *Colombo* seed sold in auction for 40s. per cwt., but subsequently 65s. was paid for five bags of good quality seed.

Cubebs — Are very flat. About 130 packages were shown to-day and bought in, fair stalky *Singapore* berries at 35s., and dusty, stalky pickings at 25s. per cwt.

Coca Leaves—Are quiet. *Huanoco* leaves were the only variety to attract buyers to-day, and 6 bales sold at 8d. per lb., whilst 6d. was paid for ordinary brownish. *Truxillo* leaves were bought in at 1s. per lb. for fair greenish.

Dragon's Blood—Was in good supply, but only one case, out of forty-six offered, sold, £9 10s. being paid for good fiery *Singapore* lump. Reeds, part broken, were bought in at £6 10s., seedy lump at £7, and saucers at 85s. per cwt.

Elemi (Gum).—Twenty cases of nice pale *Manilla* gum of good aroma sold to-day at 20s. per cwt.

Ergot of Rye—Is quiet, and sales are only effected when offered without reserve In this instance fair quality *Spanish* sold to-day at 5¾d. and wormy drossy ditto at 4½d. per lb.

Galangal.—A parcel of damaged root, amounting to 213 bags, was sold without reserve, "on account of whom it may concern," at 5s. to 6s. 3d. per cwt.

Galbanum (Gum).—No enquiries. A parcel offered to-day was bought in at 2s. for slightly run drop, 1s. 3d. for barky ditto, 1s. 6d. for fair blocky, and 10d. for very barky pickings.

Galls.—At the drug sales a parcel of *Turkey* galls sold at prices ranging from 47s. to 30s. per cwt., whilst *Japanese* galls were bought in at 45s. Privately holders of *Persia* galls are firm at previous rates, *blues* being quoted at 51s. to 53s., *greens* at 42s. to 45s., *sorts* at 48s. to 50s., and *whites* at 38s. to 43s. per cwt.

Gamboge. — Six cases only were offered to-day, all of which sold at £8 10s. to £8 12s. 6d. for fair *Singapore* pipe of clean fracture, but partly run, £7 10s. being paid for sea-damaged pipe and £7 2s. 6d. for damp pickings.

Ginger.—The market in *Cochin* kinds continues very flat, and the majority of the catalogue at the weekly sales was bought in. A few bags of rough kinds sold at 33s. to 34s. for medium and small washed, whilst native cut sold at 76s. 6d., for bold *A* cut, 56s. 6d. to 63s. for medium to good chiefly cut, and 38s. to 44s. for small to medium bright. *Bengal* root was bought in, whilst *Jamaican* was all withdrawn.

Glycerin.—The market is very firm for all varieties. The price of the *G.B.R.* brand has been raised this week to 76s. per cwt., but there are second-hand sellers at 72s., and perhaps still at 71s. of *German* 1260 double-distilled glycerin.

Guaiacum (Gum).—Nine barrels were offered to-day imported from San Domingo, three of which consisting of fine bright block sold at 1s. 7d. to 1s. 11d., whilst drossy quality sold at 4½d., and pickings at 2¾d. per lb.

Honey—Was in fair supply to-day, a total of about 140 packages being shown. The only variety sold was *Jamaican*, 21 barrels of which sold at 24s. 6d. for fair brown, 22s. for dark ditto, and 17s. for foul. *Californian* was bought in at 38s., *Australian* at 22s., and *Italian* at 25s. per cwt.

Ipecacuanha.—It was somewhat remarkable for a drug sale to have taken place and little or none of this article to have changed hands, but to-day the only lots sold were a bale of damaged *Carthagena* root, for which 4s. 3d. was paid, and a bag of low *Rio* pickings, which realised 2s. 6d. All the other root was bought in, *Rio* (Brazilian) at 6s. 1d. down to 5s. 8d., and *Carthagena* (Columbian) at 5s. 3d. per lb. Privately the market has been quiet, but steady.

Kino (Gum).—Two 45 lb. tins of genuine *Malabar* kino were bought in to-day at 12s. per lb., whilst four cases of astringent gum mixed with gum were bought in at 40s. per cwt.

Kola Nuts.—The only lot sold to-day was a barrel of sound bold *West Indian* kolas, for which 7d. per lb. was paid.

Mastic (Gum).—Fourteen cases of good pale drop were bought in at 1s. 4d. to 1s. 6d. per lb.

Menthol. — During the week business has been done privately in good *crystals* at 9s. 3d. to 9s. 6d. per lb., whilst 8s. 3d. per lb. *c.i.f.* terms is now quoted for September to October delivery. At the drug sales nine cases were bought in, including the *Kobayashi* brand at 9s. 6d. per lb.

Myrrh (Gum).—Slow of sale. A large supply was again offered, but only two bales of drossy sorts sold, for which 17s. to 20s. per cwt. was paid. Good medium picked, was bought in at £5 15s., fair ditto at 80s. and pickings at 30s. down to 15s. per cwt.

Nux Vomica.—A parcel of fine bold *Cochin* nuts was bought in at 8s. per cwt., whilst for damaged pickings 2s. 6d. was paid.

Oil (Cod-Liver).—There is no change in the position of this article. Fine non-congealing *Norwegian* oil offers at 170s. on the spot, with 150s. quoted for seconds. At the drug sales 7 casks of *Norwegian* oil, which had been slightly damaged by the fire at Sharp's wharf, sold without reserve at 147s. 6d. per barrel.

Oils (Essential).—*Peppermint* oils are still slow of sale. On the spot *H. G. Hotchkiss'* oil offers at 8s. to 8s. 3d. nominally, whilst *Wayne County* quotes at 5s. 6d. and *McK. & R's.* at 6s. per lb. *Japanese* oil quotes on the spot at 5s. 6d. for 40 per cent. oil, and 4s. to 4s. 3d. for *dementholised*. *Star anise* oil has claimed a fair amount of attention during the week, and quotations have advanced about 6d. per lb., a good deal of business having been done on the spot at 8s. per lb.; indeed some holders talk about 8s. 6d., but there would be no difficulty in buying at the former figure. For July to August shipment, 7s. 3d., for August to September, 7s., and for October to December, 6s. 3d. per lb., all *c.i.f.* terms, have been paid during the last few days. *Cassia* oil has a firmer tone, but we have not heard of any business privately. Reports from China say that the dealers are circulating the usual reports as to the smallness of new crop. The prices of French *lavender*, *rosemary*, and *thyme* oils, which will be on the market in a few days, are expected to be about 20 per cent. higher than those of last year. On the other hand, *Neroli* is much cheaper, the current quotations for new oil ranging from 7s. 4d. per oz. for *finest* down to 5s. 3d. for *petales*, whilst *Petit gran* quotes at 15s. per oz., *f.o.b.* The prices for new *Otto of rose* have not yet been fixed, but they are expected to be 5s. to 10s. per oz. lower than those of last year. *Citronella* oil is tending lower in consequence of the plentiful new crop. Oil in drums sold, for arrival a few days ago at 11d. per lb., but could now be probably bought for 10d. *Lemon Grass* is easier, and now offered at 2⅜d. per oz. on the spot. At the drugs sale several parcels of essential oils were offered and bought in, amongst them being Winter's *citronella* at 3d. per oz., Fisher's *nutmeg* at 5¼d. per oz., *Kananga* at 1s. 2d. per lb. *Cassia*, (82 per cent. of aldehyde) at 7s. 9d. per lb. *Eucalyptus* (*Platypus* brand 54·4 per cent. eucalyptol) at 2s. 4d. per lb. and *Ylang-Ylang* at 4s. 6d. to 5s. per oz. Fuor cases of *Cinnamon* oil of rank flavour sold at 3d. per oz.

Opium.—The London market is quiet and there has been but little business done during the week. Quotations are mostly as last reported. *Persian* opium is firmly held for good grades, whilst lower qualities, of which a good deal has arrived recently, are offering at rather easier rates. To-day 2 cases of *Persian* opium, damaged by water, sold without reserve at 7s. 6d. to 8s. per lb.

Orris Root.—Fair *Florentine* orris root sold in auction at 46s. per cwt., whilst twenty bales of lean dark *East Indian* were bought in at 27s. 6d. per cwt.

Peru (Balsam)—Is still tending lower. To-day 4 cases of genuine balsam from La Libertad, of recent import, were bought in at 8s. per lb.

Poppyheads—Are offering at easier rates, new *Belgian* heads being now quoted at 10s. 6d. for large and 7s. 3d. for medium per thousand, whilst *crushed* are quoted at 11s. per cwt. all *f.o.b.*

Quinine Sulphate.— The market is still quite lifeless, and the best *German*

brands are now offering at easier rates, *B. & S.* and *Brunswick* in second hand being quoted at 1s. per oz.

RHUBARB—Is quite neglected. Of 84 packages offered to-day, the only lots sold were 5 cases of medium, slightly wormy flat, *high dried*, for which 10½d. was paid, and a case of ordinary dull damaged *high dried*, which sold at 6d. per lb.

SAFFRON.—The market is very firm, with quotations for *Valencia* saffron ranging from 31s. 6d. for fine, 28s. 3d. for seconds, and 27s. 3d. for thirds, whilst 18s. 6d. per lb. is asked for *Alicante*.

SANDALWOOD.—Fifty bales of good *logs* were bought in at £40 and *chips* at £22 to £26 per ton.

SARSAPARILLA.—Genuine *Jamaican* root is held for 1s. 8d. per lb. None was sold to-day in auction. *Honduras* was bought in at 1s. 3d., and *Lima-Jamaican* root at 1s. 4d. to 1s. 6d. per lb.

SCAMMONY.—Good *root* was bought in at 50s. per cwt. and fair ditto at 37s. 6d. to 40s., whilst *Scammony resin* was also bought in at 31s. down to 11s. per lb.

SEEDS (VARIOUS).—*Canary*: At the spice sales *River Plate* seed was bought in for 24s., *Barbary* for 29s., and fine *Spanish* for 51s. per quarter of 464 lbs. *Aniseed*: *Spanish* was bought in at 21s. to 25s. per cwt. *French* was bought in at 16s. per cwt. *Cumin* was bought in at 36s. for *Maltese*, 27s. for *Saffi*, and 26s. for *Mazagean*.

SENNA.—Fresh consignments of new *Tinnevelly* senna were offered to-day, and met with a very good demand at full rates. The prices paid were:—Medium to bold green leaves, 3½d. to 4d.; small to medium greenish, 2½d. to 3¾d.; small to medium, dull and part brownish, 2d. down to 1d. per lb. A bale of good *Alexandrian* pods sold at 7d. per lb., whilst fine green leaves were bought in at 1s. 7d.; fair green, 10d.; broken, good quality, 8d. down to 5d. for ordinary specky.

SHELLAC.—Privately the market is slow, but holders ask advanced rates. At the weekly sales a moderate supply was offered, when water-damaged shellac sold at much lower rates, whilst sound qualities proved slow of sale, a decline of 2s. to 4s. being noticeable in the prices paid for *Second orange*. The current rates were as follows:—*Second Orange*: Fine *AA* in circle, good colour, but part wet, 89s.; ditto, little matted, 87s.; good bright strong *TN*, 86s. to 87s.; fair bright free, 85s.; mixed red, 83s. to 84s.; livery, 79s. to 81s.; ditto, water damaged, 71s. to 72s. *Garnet* sold at 73s. for wet blocky *AC*, whilst sound matted *G* was bought in at 82s. per cwt.

SPICES (VARIOUS).—*Cloves* are steady, but slow of sale. In auction the greater portion of the *Zanzibar* was bought in at 2d. to 2⅛d., but a few bales of fair bright sold at 2⅛d. per lb. Privately 2 3/32d. has been paid for fair quality. *Nutmegs* are in better inquiry, and *Penang* sold at rather firmer rates in auction, 2s. 10d. being paid for 64's, 1s. 9d. to 1s. 9½d. for 79's, and 1s. 7d. for 91's. *Mace* is steady, although only two cases of *Penang* sold at 1s. 10d. for good bold palish and red, part wormy. *Cinnamon chips* sold in auction at 3¼d. per lb. for fair *Ceylon*. *Pimento* is quiet but steady, 2⅜d. being paid for medium, whilst fair clean was bought in at 2¼d. per lb. *Capsicums* were bought in at 20s. per cwt. for small red and brownish off-stalk *East Indian*. *Long pepper* sold at 18s. for fresh import. *White pepper* sold at 3d. for *Penang*, whilst *Siam* was bought in at 4d. per lb. *Pepper* sold at 2¼d. for *South Coorg*, and 2⅜d. for *Ceylon*. *Arrowroot* is dull, a small proportion only of the *St. Vincent* finding buyers at 1½d. to 1⅞d.

SQUILLS—Sold to-day cheaply, twenty bales of fair palish being disposed of at 1¾d. to 2d.

STICKLAC—Is offering at lower rates. *Siam* sold without reserve in auction at 52s. for sifted, 49s. for fair clean, 40s. for block, and 38s. to 45s. for small. *Rangoon* realised 33s. for bold woody, and 31s. for woody and blocky.

TAMARINDS—Were in large supply, but very slow of sale, the only parcel sold being nine barrels of *Antigua* tamarinds, for which 8s. 6d. per cwt. was paid.

TURMERIC—Is slow of sale and offering at easier rates. At the weekly auctions good bright *Madras* finger sold at 10s. 6d.; ordinary to fair split *Cochin* bulbs at 5s. to 5s. 6d.; wormy *Bengal* at 6s. 6d., and fair bright *China finger* at 6s. per cwt.

WAX (BEES).—*Jamaican* wax was in grand demand to-day, and selling at an advance of 2s. 6d. per cwt., £7 17s. 6d. to £8 5s. being paid, according to colour. In addition, *Australiam* sold at £6 5s. to £6 10s., *Zanzibar* at £6 2s. 6d., *San Domingo* at £5 5s., greyish *Madagascan* at £6, *Holstein* at £6 17s. 6d. to £7, and *Mogador* at £5 12s. 6d. per cwt.

WAX (VEGETABLE).—*Japan* is steady. To-day ten cases of fair pale *square* were bought in at 40s. per cwt. after 39s. had been bid. For arrival 37s. 6d., *c.i.f.*, is quoted. *Carnauba*: Fifteen cases of greyish were bought in at 80s. per cwt.

NEWCASTLE CHEMICAL MARKET, AUG. 18.—The main feature in this week's report is the further advance in price of sulphur, which is attributed to the company lately brought into existence to obtain the working of British and Sicilian produce. Otherwise chemical prices generally are unchanged. Values are:—Bleaching powder, £6 10s. to £7 10s.; soda crystals, 37s. to 45s.; caustic soda, 70 per cent., £7 5s. to £7 10s.; soda ash, 52 per cent., £4 5s.; alkali, 52 per cent., £5; sulphur, £4 15s. per ton *f.o.b.*

MANCHESTER CHEMICALS AND DRYSALTERIES, August 18.—The changes in the chemical trade have been generally of a downward character since our last. This is especially the case with heavy alkalies, and now that it has been decided that the United Company is bound to take Bowman Thompson's output as produced, this may have rather a prejudicial effect on prices, as it will scarcely pay to remove and stock elsewhere. The demand from drysalters is very moderate. Bleaching powder remains stagnant, and prices for export are low, although for home consumption the figure varies from £6 12s. 6d. to £6 17s. 6d. Sulphate of ammonia is again a point lower, and sales are noted at £7 11s. 9d., Leith. Miscible naphtha ranges from 2s. 9d. to 3s., and solvent wood 3s., with little demand. Benzoles are firm, but lime salts are dull at £4 2s. 6d. to £4 5s. for brown acetate (Welsh), at station here. Sulphate of copper easy at £16 5s. to £16 15s. for best brands here. Green copperas: Again slightly higher at 33s. per ton, *f.a.s.* Manchester. Acids: In one or two instances firmer, but cream of tartar is very quiet at 91s. to 93s. per cwt. best white powdered. Bicarbonate of soda firm at £6 17s. 6d. per ton., 1 cwt. kegs. Industrial bicarbonate (for mineral waters), £4 5s. per ton bags, and £5 10s. for 1 cwt. kegs, all on rails at works, Norwich.

LIVERPOOL MARKET REPORT, August 19.—Canary seed is very quiet, with prices in buyers' favour, but little business doing, 27s. per 464 lbs. is about the spot price for Turkish, and a small lot of River Plate has sold for 21s. 6d. Ginger has been passing off freely, Sierra Leone at 18s. to 19s. 6d. per cwt. and mixed lots of Sierra Leone and Monrovian at 16s. to 18s. Beeswax: Only one lot reported, Gambia at £7 per cwt. Honey: There has been good inquiry for Californian, and a little trade done in it at 22s. 6d. per cwt. Turmeric: 212 bags of Cochin bulk were disposed of at 5s. 6d. per cwt., *ex* store. Nux vomica: 130 bags of poor seed made 3s. 3d. per cwt. Castor oil maintains its price, is in good demand, and stocks here are becoming weak, Calcutta being scarce at 3⅛d. to 3¼d. per lb.; Madras, 2½d. to 2⅝d., *ex*-quay, 2⅜d. *ex*-store; French, 1st pressure, 2⅜d. to 2⅝d.; and Belgian, 2½d. per lb. Olive oil is steady, best qualities are in good demand, and Spanish oils selling, Malaga, at £29 per tun, and Seville at £28 10s. Linseed oil remains steady at 17s. to 19s. 6d. per cwt. for Liverpool makes. Cotton-seed oil is unchanged at 15s. 6d. to 16s. for Liverpool refined, and 16s. to 16s. 6d. for American. Spirits of turpentine is firm at 19s. 6d. per cwt. Petroleum: Steady at 5½d. per gallon for Russian, and 6¼d. to 7½d. for American. Sal ammoniac: First quality, 37s.; second ditto, 35s. per cwt. Arsenic: Powdered, £23 10s. per ton. Bleaching powder: £7 to £7 5s. per ton. Copperas: Lancashire, 38s.; Welsh, 36s. per cwt. Sulphate of copperas: £16 10s. per ton. Cream of tartar remains quiet at 94s. per cwt. for finest white. Potashes: 20s. to 20s. 3d. per cwt. Pearlash: 35s. per cwt. Prussiate of potash: 7¼d. per lb. Bichromate of potash: 4⅝d. per lb. Chlorate of potash: 4¼d. to 4⅜d. per lb. Carbonate of soda: £2 10s. per ton. Bicarbonate of soda: £7 per ton. Caustic soda: 70 per cent., £7 12s. 6d. to £7 15s. per ton; 60 per cent., £6 12s. 6d. to £6 15s. Borax: Lump, 20s. per cwt.; 21s. for powder. Nitrate of soda: 7s. 10½d. to 8s. 1½d. per cwt.

THE AMERICAN PHARMACEUTICAL ASSOCIATION, which commenced its annual meeting at Montreal, on Wednesday, August 12, elected Mr. J. E. Morrison of that city as President. The members of the Association were formally received by the local pharmaceutical authorities on the opening day, whilst business, sessions, and pleasure trips have been conducted on alternate days since. The programme arranged included an electric car ride through Montreal, Outremont, Cote des Neiges, etc.; a trip through the Lachine Canal, Lake St. Louis, and Lachine Rapids, descending the River St. Lawrence to Boucherville and Vercheres, and a concert in the Windsor Hall, Mortreal.

EXCHANGE—OFFERS AND WANTS.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Books, etc.

A book of 130 Well-tried Recipes for Chemists and Druggists, comprising well-selected formulæ for general, remedial, veterinary, toilet, and everyday preparations. Post free, 1s. 6d.—Tully, Chemist, Hastings.

Miscellaneous.

Ten gross German floats in oval wooden boxes; what offer for lot or part; quite clean; will send sample.—Worsley, Chemist, Wigan.

Special Offer.—Increase your business by introducing the under-mentioned valuable specialties (over 20 years' reputation):—Korn-e-Keur cure for corns; Cough Specific; Neuralgic Mixture, never fails; Odontene, instantaneous cure for tooth-ache (testimonials innumerable), neatly copied for 5s., free.—Lea, 11, George Street, Woburn, Beds.

Surplus stock: 7 lb. pulv. extract. coloc. co. in 1-lb. lever lid tins; 1 lb. and upwards at half wholesale drug-list price; in perfect condition.—Worsley, Chemist, Market Place, Wigan.

WANTED.

Bougie and Pessary Moulds, perfect condition, cheap.—Jeeves, Chemist, Brighton.

NEWS IN BRIEF.

Laudanum, taken too freely to produce sleep, has caused the death of Elizabeth F. Harding (45), at Ludlow.

Carbolic Acid was left at large on a chiffonier, in a house at Ashton-under-Lyne, and a child who drank from the bottle died from the effects in a few hours.

Chlorodyne, to the extent of eleven bottles, valued at 27*s.* 6*d.*, having been obtained by false pretences from Mr. F. H. Rodgers, chemist, Peel Causeway, by a domestic servant named Kate Bentley, of Altrincham, she has been committed for trial at Quarter Sessions.

Mr. F. J. Miller, pharmaceutical chemist, 19, Great Denmark Street, Dublin, has a smart assistant, who whilst serving two well dressed young women, noticed, he alleges, one of the girls appropriating a large bottle of magnesia. He immediately sent for a police constable and had the accused arrested.

Teasdale's Chlorodyne was proved to contain morphine at Sheffield County Court, on Wednesday, and His Honour Judge Waddy felt impelled, therefore, to mulct Messrs. Burgon and Co., grocers, of that city, in two penalties of five pounds each, for illegally selling bottles of that preparation on May 1 and 12 last.

Death of Mr. Edward Harvey.—We regret to announce the death of Mr. Edward Harvey, which occurred on Monday last, the 17th inst. Mr. Harvey had been for many years a partner in the firm of Barrow, Harveys and Co., wholesale druggists, Giltspur Street, E.C., and was very well known amongst pharmacists in his capacity as a representative of the firm. He has been a member of the Pharmaceutical Society since 1852.

Botanical Nomenclature Run Riot must be the verdict on the conduct of an old gentleman residing at Brixton. He is the owner of a garden, and has been seized with a desire to label his flowers after the manner of botanists, but knowing nothing of scientific terms has labelled them "Nux vomica," "Nisi Prius," "Ipecacuanha," "Particeps Criminis," etc., etc., quite irrespective of the fitness of the names applied.

Mr. Gladstone has received at Hawarden Castle the members of the English Arboricultural Society, and revealed another of the varied aspects of his many-sided character by showing a considerable grasp of technicalities whilst dilating upon the trees in his gardens and grounds. "We are sometimes told (said the veteran statesman, as he pointed with his stick to a freak) that Nature is perfectly uniform in her operations, but I don't believe it. There are exceptions always."

PERSONAL.

Mr. J. E. W. McFall, F.C.S., pharmaceutical chemist of Liverpool, has passed the second M.B. examination of the Victoria University.

Mr. Matthew Henry Fox, Pharmaceutical Chemist, has purchased from the executors the business of the late Mr. Geo. Gee, Hightown, Sandbach, Cheshire.

Mr. G. H. Gare, pharmaceutical chemist, of Bath, has taken the business of the late Mr. Allen of Lymington, Hants, and is entirely re-stocking, re-modelling and re-fitting the place in order to bring it up to date in every way.

Mr. E. A. Holloway, of Torquay, met with an accident by falling from his bicycle, while going to business from his private residence on the 18th inst. He broke his left arm below the elbow, and sustained a slight fracture of the skull, but is progressing favourably.

Mr. J. Laidlaw Ewing, Chairman of the North British Branch Executive of the Pharmaceutical Society, leaves by the s.s. "Teutonic" on Wednesday, August 26, for a six weeks' tour in the United States and Canada. He is to be accompanied by his partner, Mr. Robert Dick.

Mr. John Harvie, chemist and druggist, has recently been elected a Councillor of the Airdrie Town Council (Lanarkshire). Mr. Harvie, who is 66 years of age, has been in business in Airdrie since 1854, and for many years has taken a deep interest in public matters, being first elected a Town Councillor in 1877. In 1878 he was appointed Second Bailie and First Bailie he following year. In 1882 he became Senior Magistrate and J.P. Many other prominent public offices have been held by Mr. Harvie, with credit to himself and to the general satisfaction of his fellow townsmen.

TRADE NOTES AND NEWS.

Messrs. Evans, Gadd, and Co., wholesale and manufacturing druggists, of Exeter, are issuing a new price list of specialties in perfumery. They will be happy to send a copy to any chemist in business on application.

Hooper's Drug Stores, Limited, was registered on July 29, by Fraser and Son, 16, Furnival's Inn, with a capital of £5000 in £1 shares. Object: To acquire the business carried on by W. H. Hooper, at 59, High Street and 131, Peckham Rye, Peckham, S.E., and to carry on the business of a chemist and druggist, patent medicine vendor, dealer in medicated wines, etc. Registered without articles of association. Registered office, 59, High Street, Peckham, S.E.

SPECIAL NOTICE.

The Edinburgh Pharmacy Athletic Club has arranged for a Golf Prize Competition on Leven Links on the autumn holiday, September 21. The company are to travel by train, leaving the Waverley Station at 6.30 a.m. Particulars can be had from Mr. James Stott, convener of Golfing Section, 10, Royal Crescent. Members intending being present should send intimation to the Convener not later than September 14.

NEW BOOKS AND NEW EDITIONS.

Diseases of the Nose:—Catarrh, Hay Fever, Impure Breath, Ozena, Nasal Deformities and Irregularities, Loss of Smell, Painless Treatment of Polypi and other growths, Cases illustrating methods of treatment, etc. By Litton Forbes, Surgeon to the Eye and Ear Hospital. Post free, 2s. 8d. New edition, illustrated. (H. Renshaw, 356, Strand, London.)

New Works by Mr. Walter Tyrrell, M.R.C.S.:—Eczema: Its Cause and Cure; a common-sense teaching, 1s. Nervous Exhaustion: Its Causes, Outcomes, and Treatment. Second edition. 3s. Gout: Its Nervous Origin, 1s. Epilepsy: Its Tonic Treatment. Fifth edition. 3s. (Henry Renshaw, 356, Strand.)

Stammering, Stuttering, etc.: their Causes and Cure. By the Senior Physician, Hospital for Speech Affections. Price 1s. (The Savoy Press, Savoy House, 115, Strand, W.C.)

SPECIAL NOTICE.—STUDENTS' NUMBER OF THE JOURNAL.—The 'Pharmaceutical Journal' for September 12 next will be specially devoted to educational matters of interest to pharmacists. Information will be given respecting the various institutions in Great Britain and Ireland where courses of instruction are provided for pharmaceutical students, and the secretaries of such institutions are requested to furnish full particulars without delay. All communications should be addressed to the "Editor," 17, Bloomsbury Square, W.C.

MARKET REPORT.

[*Specially compiled for the Pharmaceutical Journal.*]

[*The quotations here given are in all cases the lowest net cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. Is is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.*]

LONDON, AUGUST 27, 1896.

There is but little of interest in the produce markets to report this week. In the chemical market carbolic acid is quiet but steady, citric acid easier, tartaric acid unchanged, and cream of tartar lower on the spot, but firmer for delivery. Permanganate of potash is still scarce and dear, copper sulphate lower, and hyposulphite of soda in good demand. Amongst the fine chemicals the most important changes has been the further reduction of the English and German makers quotations of quinine salts, and the market is very quiet. Menthol is easier, glycerin a strong market, and caffeine and opium alkaloids quiet. In the drug market chamomiles continue to advance in price, whilst ipecacuanha is steady, and opium quiet. Amongst the essential oils star anise oil is a trifle easier, and peppermint oils considerably cheaper. Full details will be found below:—

ACACIA (GUM).—Privately there has been a fair enquiry for sorts and picked gum, but only a limited business has been done, owing to the high prices still asked by holders. The current quotations are:—Fine picked, 21s. to 22s.; good sorts, 15s. to 16s.; ordinary sorts, 13s. to 14s.; reddish picked, 16s.; and block, 8s. to 10s. per cwt.

ACETANILIDE—Is a very strong market, and there is little to be had in first-hand under 1s. 4d. per lb.

ACID, CARBOLIC.—The market is quiet but steady, the current quotations being as follows:—*Crystals* 34° to 35° C., 6¼d.; 39° to 40° C., 6¾d.; 39° to 40° C. (*detached crystals*), 7¾d. per lb. *Crude* still quotes at 2s. for 60 per cent., and 2s. 4d. per gallon for 75 per cent. *Liquefied* and *cresylic* are both unchanged at 1s. per gallon.

ACID, CHRYSOPHANIC—Is firm. *British* makers still ask 25s. per lb. for small quantities, and the high prices seem likely to be maintained.

ACID, CITRIC—Is quiet. There are now offers of second-hand *English* acid on the spot at 1s. 2½d. per lb. The makers' price is 1s. 2¾d. *Concentrated lemon juice* quotes at £13 10s. to £13 15s. per pipe *f.o.b.* Messina.

ACID, TARTARIC.—The market is firm for *English* acid, but *foreign* brands are offering at slightly easier rates. On the spot *Lawes'* and *Kemball's* brands still offer at 1s. 3d. per lb, but *foreign* acid, both in *powder* and *crystal*, is quoted at 1s. 1¾d. to 1s. 2d. per lb.

ALOES.—The current quotations for *American* brands is 2s. 4d. per lb.

EUONYMIN.—Good makes of *green* and *brown* American euonymin are quoted at 23s. to 24s. per lb.

AMERICAN DRUGS.—The following are the current spot quotations for some of the more important *American* drugs:—Cascara sagrada *bark*, new, 19s. to 20s.; old, 23s. per cwt. Wild cherry *bark*, 4d. per lb. Black willow *bark*, 6d. per lb. Snake *root*, 1s. 1d. per lb. Senega *root*, 1s. per lb. Golden seal *root*, 1s. per lb. Euonymus *root*, 10½d. per lb. Mandrake *root*, 2d. per lb.

AMMONIA COMPOUNDS.—*Sulphate* is dull of sale but firm. On the spot grey 24 per cent. quotes at £7 15s., whilst *Hull* quotes at £7 12s. 6d., *Leith* prompt at £7 11s. 3d., *Beckton* at £8, and *Beckton* terms at £7 12s. 6d. *Sal ammoniac* is unchanged at 37s. for *firsts*, and 35s. for *seconds*. *Carbonate* still quotes at 3d. in *casks*, 3⅛d. in *kegs*, and 3¼d. in *jars*, whilst *powder* offers at ¼d. per lb. above these rates.

CAFFEINE.—The market is quiet, but makers' quotations are still maintained at 18s. per lb. for quantities of not less than 100.

CAMPHOR—Remains quiet but steady. On the spot *Formosan* camphor is quoted at 120s., business having been done at this rate, whilst 130s. is asked for *Japan*. For arrival there are offers of *Formosan* camphor, September to November shipment, at 100s. per cwt., whilst *Japan* is quotable at lower rates, but no business has resulted, even at 110s. per cwt., *c.i.f.*

CAMPHOR (REFINED).—There have been no changes in the manufacturers' quotations, but we understand the *English* refiners are busily engaged in executing orders, although there is no immediate likelihood of a change in the quotations.

CHAMOMILES—Continue to advance in price daily, and seem likely to go higher. To-day good new *Belgian* flowers are held for 65s. to 68s. per cwt., with small sorts at 50s.

COLOCYNTH—Is firm at unchanged rates, good to fine *Turkey* apple being held for 2s. 9d. to 2s. 10d. per lb., whilst fair *Spanish* quotes at 1s. to 1s. 2d.

COPPER SULPHATE—Is a very slow market at a considerable decline in value, £15 15s. to £16 15s. being now the spot quotation, the latter figure being for the *Anchor* brand.

CREAM OF TARTAR.—On the spot the market has been quite inactive throughout the week, and spot quotations are again 1s. to 2s. per cwt. lower. Best white *French crystals* are offered at 86s. to 87s. whilst for *German* brands of powder, 88s. to 92s. is quoted, according to brand. To-day it is said the French market is firmer, and there are no sellers for shipment from Bordeaux under 82s. per cwt. *f.o.b.*

COAL DISTILLATION PRODUCTS.—*Toluol* is a trifle easier, *pure* being now offered at 2s. 10d. per gallon. *Benzole* is a strong market at firmer rates, 3s. being now asked on the spot for 50 per cent., whilst 90 per cent. is held for 4s. 3d. per gallon. *Creosote*, 1⅝d. per gallon. *Crude Naphtha*: 30 per cent. at 120° C. quotes at 1s. 2d. per gallon. *Solvent Naphtha* is quoted at 1s. 9d. for 95 per cent. at 160° C., whilst 90 per cent. at 160° C. is worth 1s. 4½d., and 90 per cent. at 190° C., 1s. 1½d. per gallon. *Anthracene*: 13 *A*, 10½d.; *B*, 9½d. per unit. *Tar* quotes at 11s. 6d. per barrel for *refined*, and *pitch* at 32s. per ton, *f.o.b.*

GALLS—Are very quiet for all varieties, and little business has been done, except in a small lot of *Persian* at unchanged rates. The current quotations are as follows:—*Blues*, 51s. to 53s.; *greens*, 42s. to 45s.; *sorts*, 48s. to 50s.; and *whites*, 38s. to 43s. per cwt.

GENTIAN ROOT—Is offering cheaply. On the spot 19s. is nominally quoted for good *French* root, whilst for arrival 17s. per cwt. *c.i.f.* terms is asked.

GERMAN DRUGS.—The following are the current quotations for bulk quantities of some of the more generally used drugs, all being offered at *c.i.f.* terms London or Liverpool:—Belladonna root, 36s.; *leaves*, 38s. to 50s. Henbane *leaves*, 34s. Arnica *flowers*, 28s. Colchicum *conns*, 35s. to 40s. Valerian *root*, 23s. Black hellebore *root*, 6s. Digitalis *leaves*, 25s. per cwt.

GINGER—Is still slow of sale for *Cochin* varieties. At the weekly sales only about 170 bags changed hands at a decline of about 1s. per cwt., the following prices being paid:—Medium and small washed rough, 30s. 6d. to 31s. *Native cut*: Good to fine bold, 62s. to 68s.; medium ditto, 50s. to 52s. 6d.; and ends, 34s. 6d., whilst limed *Japan* was bought in at 17s. to 17s. 6d., and *African* at 22s. 6d. per cwt. *Jamaican* root was in good demand and sold at a further advance, 80s. to 83s. being paid for fair lean, and 95s. for medium bright washed.

MENTHOL—Is easier. A fair business has been done by the dealers during the week at 9s. 3d. per lb. for good white *crystals*, but now buyers are not disposed to pay more than 9s.

OILS (ESSENTIAL).—*Star Anise* oil is quiet, and has been selling during the week at rather easier rates, a fair business having been done on the spot at 7s. 10½d., and this figure up to 8s. is now the current quotation. For July to August shipment 7s. 3d. per lb.,

c.i.f. terms, is still quoted, 7s. 1½d., *c.i.f.*, having been paid. *Cassia* oil is unchanged, 70 to 75 per cent. oil being still quoted at 7s. 6d. per lb. on the spot. *Peppermint* oils are generally easir. *H. G. Hotchkiss'* brand offers at 8s. per lb. nominally, and probably less would buy, whilst *Wayne county* quotes at 5s. 3d. to 5s. 6d. *Japan* oil of 40 per cent. menthol strength offers at 5s. to 5s. 3d. on the spot, whilst a fair business has been done in *dementholised* oil at 3s. 9d. per lb. and this price up to 4s. is now the general offer. *Citronella* is offered at very low rates for forward delivery, *drums* being quoted at 10d. per lb., *c.i.f.*, whilst *Lemongrass* is easier at 2¼d. per oz. on the spot.

Oils (Fixed) and Spirits.—*Cotton* is quiet but fairly steady. *Refined* oil is quoted at £15 10s. to £16 5s. on the spot according to brand and package. *Coconut.*—The market is firm, *Ceylon* being dearer at £23, whilst *Cochin* is unchanged at £26 10s. on the spot, *Linseed* is firm at the close, but prices show a decline on the previous ones, oil in barrels being now worth £16 15s. on the spot. *Palm* is dearer at £21 for *Lagos*. *Olive* is unchanged at £29 for both *Levant* and *Spanish*. *Turpentine* is firm at 18s. 6d. on the spot for *American* spirit. *Petroleum*: Unchanged.

Opium.—The London market has been very quiet, and quotations show no change from those last reported. From Smyrna rather easier rates are quoted. For *Persia* opium there is no enquiry whatever. Fine qualities are held for 11s. to 11s. 6d., but low grades are freely offered at 10s. to 10s. 6d. per lb.

Potash Compounds.—*Chlorate* is quiet at 4½d. per lb. on the spot. *Bicarbonate* is strong, at 4¾d. per lb. *Prussiate* is quoted at 7d. for *English*, with 6½d. asked for *Beckton*. *Cyanide* is steady at 1s. 5d. for 98 per cent. *Permanganate* continues very scarce and dear, small *crystals* being held for 77s. 6d. per cwt.

Quicksilver.—Since our last report a good business has been done, and the importers have raised their quotations 2s. 6d. per bottle, making the price £6 10s. Second-holders offers at 1s. per bottle less.

Quinine.—The principal feature in the chemical market this week has been the further reduction in the quotations of the *English* and *German* makers who on the 24th inst. announced decline of 1d. per oz. The quotations, according to the circular issued by *Whiffen* and the agent for *Boehringer* and *Soehne*, are now as follows, for quantities in bulk:—*Sulphate* and *Bisulphate*, 1s.; *Hydrochlorate*, *Bromide*, and *Salicylate*, 1s. 4d.; *Phosphate*, 1s. 5½d.; and *Valeriante*, 1s. 7d. per oz. These quotations are for 1000-oz. quantities, and intimation is given to the effect that the falling clause on contracts will be allowed. *Howard's* circular at first sight appears ½d. per oz. higher than the others, but the reduction for large quantities and allowance on contracts brings the price down to the same level. Second-hand holders of *Quinine* are offering at very low rates, there being sellers of *B* and *S* and *Brunswick* at 10¼d. per oz. without buyers.

Shellac—Is quiet, but prices are unchanged. Privately *TN orange* quotes on the spot at 85s. to 86s. per cwt., whilst for *AC Garnet* 83s. is asked. At the weekly sales the supplies offered were very small, and consisted partly of damaged *Second orange*, which sold at fully steady rates. Sound qualities were very slow of sale, and only a small business was done at unchanged rates, *TN* basis being quotable at 85s. The following prices were paid:—*Second Orange*: Fair pale *FOS* in diamond, part hard, 90s.; *GEM* in diamond shivered block, 77s.; also without reserve more or less wet, 69s. to 73s. *Garnet*: Good horny *AC*, 82s. to 83s. *Button*: Fair *BL2*, 87s.

Soy.—*China* continues slow of sale at 10d. to 10½d. per gallon for fair quality. At the spice sales 50 casks of newly-imported *Chinese* were bought in at 1s. per gallon.

Spices (Various).—*Cloves* were selling cheaply in auction, *Zanzibar* realising 1¾d. to 1⅞d. for medium dark, 2d. for fair, and 2d. to 2⅛d. for good fair bright. Fine picked *Penang* sold at 8½d., whilst for good bold pale *Ceylon* 6d. per lb. was paid. For delivery *Zanzibar* cloves are rather dearer. *Nutmegs* were in good demand and selling at a further advance. For *Penang* 2s. 11d. was paid for 64's, 2s. 10d. for 65's and 1s. 10d. for 80's. The remainder were bought in. *Banda* mostly sold at 7d. for wormy up to 1s. 9d. for 85's. *Cassia buds* were bought in at 85s. per cwt. for '96 to '97. *Taiwoo*. *Cassia lignea* is quiet but steady at 33s. per cwt. *Pimento* is dull at unchanged rates, 2⅞d. per lb. being paid for common, 2¼d. for fair, and 2⅜d. for good quality. *Capsicums* sold at 14s. per cwt. for small round *Cochin*, whilst off stalk *Japan* were bought in at 26s., and mixed *Natal* at 70s.

Sticklac—Is quiet and neglected. In auction 81 packages were bought in, fair *Siam* at 52s. per cwt.

Tamarinds—Are steady but somewhat slow of sale. At the spice sales a parcel of *Barbados* and *Antiguan* were all bought in, but subsequently 30 barrels of the latter sold at 8s. 6d. to 9s. per cwt.

Tragacanth (Gum).—A good business has been done in this article since our last report, at a variable advance in price. The greater part of the business has been confined to the lower qualities. It is said that only a moderate supply is now on the market. The current quotations are as follows:—Firsts (fine pale "druggists"), £14 to £14 10s.; seconds, £12 10s. to £13 10s.; thirds, £11 to £12; fourths, £9 to £10 10s.; yellow and pinky, £7 10s. to £8 10s.; and other grades down to 40s. per cwt.

Turmeric—In slow demand privately, *Bengal* being quoted at 7s. to 7s. 3d. and ordinary *Cochin* split bulbs at 5s. 9d. per cwt. In auction fair *Cochin* finger was bought in at 6s. 6d. per cwt.

Wax (Japan)—Is decidedly easier on the spot. Good pale *squares* can now be had at 37s. 6d. per cwt., whilst the arrival quotation has dropped to 35s., *c.i.f.*

Manchester Chemicals and Drysalteries, August 25.—There is little new to report in heavy chemicals, and there is an absence of steadiness. Sellers appear anxious to complete sales, and concessions are made which cut profits down to a minimum. Recovered sulphur, as a result of the recent combine, has further risen to £4 15s. per ton. Naphthas are again lower, and may be quoted at 2s. 8d. for solvent wood and miscible. Bleaching powder is extremely dull at £6 12s. 6d. to £6 17s. 6d. on rails. Aniline oils and salts are advancing, the former being quoted at 9¾d., and the latter at 8¾d. Green copperas is a point higher than last week, best Lancashire being quoted 33s. to 34s. *f.a.s.* Manchester Ship Canal, and 38s. to 40s. *f.o.b.* Liverpool. A big business has been done in pitch at about a shilling in advance of late rates. Soda crystals are dull at 35s. to 37s. per ton in bags. Yellow prussiate is firmly held at 7½d. for local make. Epsom salts: 65s. per ton, and Glauber's, 23s. 6d. per ton, bags. Carbolic acid is steady, and there is no change in benzols.

Newcastle Chemical Report, August 25.—The only special feature on this market is the continued scarcity of sulphur. The article is still firmly held at the advanced price. Other chemicals unchanged, and little called for. Prices are:—Bleaching powder: £6 10s. to £7 10s. Crystal soda: 37s. 6d. to 45s. Caustic soda: 70 per cent., £7 5s. to £7 10s. Soda ash: 52 per cent., £4 5s. Alkali: 52 per cent., £5. Sulphur: £4 15s. per ton.

Liverpool Market Report, August 26.—Canary seed is quiet in tone, Turkish ruling 26s. 6d. to 27s. per 464 lbs.; 55 bags of River Plate sold at 21s. 6d. Kola nuts: 8 bags of dried made 2½d. per lb., and 10 baskets fresh, 1d. per lb. Quillaya bark: 10 tons of Chilian sold at £12 2s. 6d. per ton. Beeswax: 55 sacks of Chilian were disposed of at £7 to £7 15s. per cwt., and about 2 tons of Gambia at £6 15s., with sales on private terms of Sierra Leone and Benguela. Cochineal is firmly held for higher rates, stocks are small, and inquiry good. Castor oil is steady at late rates, Calcutta at 3⅛d. to 3¼d. per lb., with a small supply ex quay at 3d. Madras 2½d. to 2⅝d. and French, 1st pressure, 2⅜d. to 2⅝d., Belgian 2½d. Olive oil is in fair demand, with a general advance in Spanish oils; Malaga has risen to £28 15s. per tun, Seville is at £29, and finer oil up to £34. Linseed oil: Liverpool makes in export casks 17s. 3d. to 19s. per cwt. Cotton-seed oil: Liverpool refined held for 15s. 6d. to 16s., American 16s. to 16s. 6d. per cwt. Spirit of turpentine has declined slightly, 19s. 3d. per cwt. Petroleum: Russian steady at 5½d., American 6¼d. to 7½d. per per gallon. Sal ammoniac: 37s. per cwt. Carbonate of ammonia: 3⅛d. per lb. Sulphate of ammonia: £8 per ton. Bleaching powder: £6 17s. 6d. to £7 2s. 6d. Copperas: Lancashire, 38s. per ton; Welsh, 36s. Sulphate of copper: £16 5s. to £16 7s. 6d. per ton. Potashes: 20s. to 20s. 3d. per cwt. Pearlash: 35s. per cwt. Prussiate of potash: 7½d. per lb. Cream of tartar: Slow of sale at 94s. per cwt. for finest white. Saltpetre: Cheaper. Kegs, 23s. per cwt.; barrels, 22s. 9d. Bichromate of potash: 4⅝d. per lb. Caustic soda: 70 per cent., £7 7s. 6d. per ton; 60 per cent., £6 7s. 6d.

NEW BOOKS AND NEW EDITIONS.

Physics for Students of Medicine. By Alfred Daniell, M.A., D.Sc. 4s. 6d. (London: Macmillan and Co.)

Indigestion: Its Causes and Cure. By John H. Clarke, M.A. 1s., post free. (London: James Epps and Co., Ltd., 170, Piccadilly, and 48, Threadneedle Street.)

MISCELLANEOUS NEWS.

At an inquest held at Blackpool last Tuesday on a publican who had poisoned himself with arsenic, it appeared that the requirements of the Pharmacy Act had not been fully complied with by the seller of the arsenic, and though the Coroner expressed his opinion that the result had not been influenced by that circumstance, the case serves to show how necessary it is for chemists, as the legally authorised sellers of poison, to adhere strictly to the regulations of the Act for their own protection from inconvenience no less than for the safety of the public.

Potassium Chlorate in Solution was administered to a child in mistake for lime water by a nurse at the Western Fever Hospital, Fulham, and the patient died the same day. But at the inquest the resident surgeon said the post-mortem examination showed that death was due to syncope from diphtheria. The Coroner said it was fortunate the mistake had not caused death, and advised the nurse to be more careful in future.

Milk Preservation and Poisoning.—Before the Enfield justices last week, the Middlesex County Council summoned John C. Waters, of Ponder's End, for selling milk containing boric acid and water, a mixture calculated to injure the public health.—Mr. E. Bevan, analyst to the Middlesex County Council, certified the presence of 30 grains of boric acid to the pint, and 10 per cent. of added water.—Dr. John Stevenson, President of the Society of Public Analysts, said boric acid and preparations thereof were largely used as preservatives of food. About 0·1 per cent. of boric acid, or 0·15 of borax, was sufficient to preserve milk for twenty-four hours, and this quantity should not, in his opinion, be exceeded. The quantity of borax taken by a child should not exceed 10 grains per day, a larger quantity being calculated to injure health, inasmuch as excess of the drug retarded digestion, and was calculated to injure the heart and cause skin eruptions. Thirty grains of borax to the pint was an excessive quantity, and anybody — more especially a child—drinking the milk would be at the risk of the attendant evils.—The defence was entire ignorance of the presence of the acid in the milk.—The magistrates (Mr. H. C. Bowles, E. Matthews, and A. P. Kitching), considered the case proved, but, taking into consideration that this was the first case of the kind before them, they agreed to impose only a nominal penalty upon the defendant, viz., 20*s.* fine and £1 10*s.* 6*d.* costs.

Spirit of Salt in Mistake for Whiskey.—Mr. A. W. Wyatt, Deputy-Coroner, held an inquest at the "George and Dragon," Peckham, on August 15, on the body of William Watson, a bricklayer, aged 45, of 35, Stafford Street, Peckham. The widow said that on the previous Monday her husband returned home the worse for drink and went to bed. The following morning witness noticed that he appeared ill, and sent for a doctor, who attended him until his death. Deceased told witness that he picked up a bottle of spirit of salt which stood on the sideboard and drank a portion of the contents in mistake for whiskey. He had never threatened suicide, and was in regular work. The bottle of spirit of salt had been on the sideboard for months. Deceased used it in his work, and placed it there himself.—Dr. T. E. Webb stated that he found deceased suffering from muriatic acid poisoning. The usual remedies were resorted to, but he never rallied, and died on Wednesday last week. A post-mortem examination disclosed the fact that deceased had taken sufficient poison to kill twenty men.—A verdict of "Death from misadventure" was returned.

Science Teaching at Tiverton.—At the annual prize distribution in connection with the Tiverton Middle Class Schools the report of the County Council examiners (Mr. Young and Mr. Moyle) showed that the boys had been taught chemistry (practical and theoretical), mechanics, and the second stage of mathematics to a few. In one branch of chemistry the examiners find that the boys are exceptionally well acquainted with their subject, and though they do not speak so highly of their manipulative skill, that is probably due to the fact that the substance presented to them was not in the form set out in the syllabus of the Science and Art Department, under which the work is primarily done.

Science Teaching at Exeter.—At the last meeting of the Exeter City Council, the Museum and Technical Education Committee presented the annual report of the working of the Exeter Technical and University College, in connection with which pharmaceutical classes have recently been started. The report stated that in 1895 in the science school there was an increase of 13·9 per cent. in the number of students, as compared with the previous year. Increased efficiency was also clearly shown by the greater number of those students who entered for science examinations who took the advanced stages, and in the higher percentage owho passed. The most important new departures had been the opening of a new chemistry class-room in October, 1894, and the formal opening, by his Grace the Duke of Devonshire, K.G. of the new buildings, provided by the will of Mr. Kent Kingdon. The additional accommodation thus provided at the museum has proved an inestimable boon to both students and teachers. More room, however, is urgently needed. Four additional class-rooms and a large room fitted properly as a physical laboratory would enable the college work to be arranged in the best possible manner, and would allow of the large new rooms being transferred to the museum. Mr. Alan Ware (pharmaceutical teacher) had been appointed in the place of Messrs. Foweraker, Turner, and Stoneman, Mr. Ware giving the whole of his time to the service of the College. The committee desired to recognise the conspicuous ability and devotion to duty displayed by the Principal (Mr. A. W. Clayden, M.A.), to whom a large portion of the success of the college is due. On the motion of Alderman Daw, the report was adopted.

Death of a Retired Chemist at Sheffield.—The death occurred at Sheffield, on Wednesday, of Mr. Henry Priestley, who at the time of his retirement into private life two years ago, was the oldest pharmacist in Sheffield, having been engaged in the profession just half a century. His business was purchased by Mr. G. T. W. Newsholme. The deceased was for a long period a great local authority on pharmacy questions.

BRITISH PHARMACEUTICAL CONFERENCE.

The Liverpool Local Committee met at the Royal Institution, Liverpool, on the 18th inst. for the purpose of winding up the affairs in connection with the recent Conference. Dr. Symes presided, and the local treasurer, Mr. John Bain, read his report, which disclosed a remarkably satisfactory state, for after paying all expenses a balance remains in hand of £35. The President, in discussing the general work of the Committee and the results, expressed his gratification that after entertaining the Conference visitors liberally and receiving their hearty thanks and expressions of appreciation, there should be such a handsome balance in hand. The liberal response of many local friends to the appeal for funds, the really excellent working out of the various details by the Hon. Secretary, and the generous manner in which the White Star Company and others had met the Committee, together with several fortuitous circumstances of a minor character, had contributed to this very satisfactory condition of affairs. The Pharmaceutical Conference, giving every member a full return for his subscription in the shape of the 'Year-Book' and in the endowment of research benefiting the entire profession, he proposed that a new departure should be inaugurated this time as regarded the disposal of the balance, and that was that part of the money should be handed over as a donation to the Conference General Fund, to further the work of the organisation. As Mr. Wardleworth, by his exertions, which had contributed in no small degree to the success of the Conference, was deserving of their warmest thanks, he thought the compliment most acceptable to his genial disposition would be that of giving a donation to the Benevolent Fund of ten guineas, vesting in him, Mr. Wardleworth, the votes resulting from this, namely, ten per annum for ten years.

A resolution was then put to the meeting as follows:—

> "That the balance of the fund subscribed locally for the Liverpool meeting of the British Pharmaceutical Conference be disposed of by the following donations:—To the General Fund of the Conference, £20; to the Benevolent Fund, £10 10*s.*; one-third of the balance remaining after this to go to the Liverpool Pharmaceutical Students' Society, and two-thirds to the Liverpool Chemists' Association."

The resolution was carried unanimously, and votes of thanks to Mr. Bain, the Treasurer, the Lancashire Watch Company, the Precentor of Chester Cathedral, and Messrs. Ayrton and Saunders concluded the proceedings.

EXCHANGE—OFFERS AND WANTS.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Books, etc.

'Pharmaceutical Journal' from January, 1883, to June 27, 1896, 13½ volumes, unbound, in good condition, 5 numbers only missing, first reasonable offer.—Hydrate, 'Pharmaceutical Journal' Office, 5, Serle Street, W.C.

A book of 130 Well-tried Recipes for Chemists and Druggists, comprising well-selected formulæ for general, remedial, veterinary, toilet, and everyday preparations. Post free, 1s. 6d.—Tully, Chemist, Hastings.

'Pharmaceutical Journal,' from commencement to present date, first 7 vols., bound. What offers?—Parker and Son, 6, Botchergate, Carlisle.

Newth's 'Chemistry,' 7s.; Remsen's 'Theoretical Chemistry,' 4s. 6d.; Wills' 'Elements of Pharmacy,' 4s. 6d.; 'Art of Dispensing,' 2s. 6d.; Jago's 'Chemistry,' elementary, 1s. 6d., advanced, 2s. 6d.—W. Lean, 7, Woodsley Terrace, Clarendon Road, Leeds.

'Pharmaceutical Journal,' from commencement in 1842, 15 thick vols., well bound, 20s.; Woodville's 'Medical Botany,' 3 quarto vols., over 200 beautifully coloured plates, 21s., free, published £8 11s. 6d.—Davis, "Chestnuts," Gordon Hill, Enfield.

Miscellaneous.

Gonorrhœa Mixture Recipe, unfailing, good to take, easy to make, a clear mixture, copies 1s. each.—Aloes, 5, Serle Street, W.C.

Twenty doz. compo. funnels, sizes 1 to 7, 3s. doz.; blue canopy-top ointment jars, ¼ lb. 4d, 1-lb. 9d., 2-lb. 1s., 4-lb. 1s. 10d.; blue dome top, 4-lb. 1s. 10d. each; Wedgwood mortars and pestles, Nos. 10, 5s.; 9, 4s.; 7, 2s. 6d.; 2, 7d.; 1, 6d.; 0, 5d. each, cash with order.—Frost, Beeston, Notts.

For Sale.—About 40 gross ½d. sticky fly-papers, 2s. 6d. gross; 16 gross 1d., 4s. gross; samples forwarded for 2d.—Sneath, chemist, Grimsby.

What offers for dozen each Tippett filters, 1s. 9d.; Hunt's bottle-caps, all sizes; Dobson's black-leg drinks, 1s. 6d.; Manning's gout mixture, 1s.; 1½d.; Bunsen's butter-colouring, 1s.; Potter's composition essence, 1s. and 6d.?—Turner, Cranbrook, Kent.

NEWS IN BRIEF.

The Marriage has been solemnised at Dublin of Thomas Bayne, L.P.S.I., to Miss Sarah Jane Cooper.

Mr. David Lawson Kirkpatrick, chemist, has been appointed apothecary to the Castlereagh Dispensary District.

Chloroform.—A man who was suffering from a fractured leg died under chloroform on Monday last at the Mater Hospital, Dublin.

Mr. James Glendinning, L.P.S.I., has just opened a handsomely-equipped medical hall and pharmacy at Waterloo Place, Londonderry.

Professor Whitla, apothecary, Belfast, has been elected President for the ensuing year, of the North of Ireland branch of the British Medical Association.

Mr. G. B. Laing, formerly with Messrs. T. and H. Smith and Co., has been appointed manager to Messrs. Anderson and Co., wholesale chemists, Junction Bridge, Edinburgh.

"Spunk!" or methylated spirit, is stated to have been the favourite beverage of a female who got "six months' hard" at the Northern Dublin Police Court last week for cruelly ill-treating her children.

Overdoses of Laudanum have caused the death of two women, one at Ludlow on Saturday last, and another at Cardiff on Sunday. Both appear to have been using the preparation to alleviate pain and produce sleep.

Carbolic Acid.—A suicidal maniac who was being treated in the Meath Hospital, Dublin, for self-inflicted wounds died last week from the effects of a large dose of carbolic acid, which was kept in the lavatory for disinfecting purposes, and without apparently using any precaution against accident

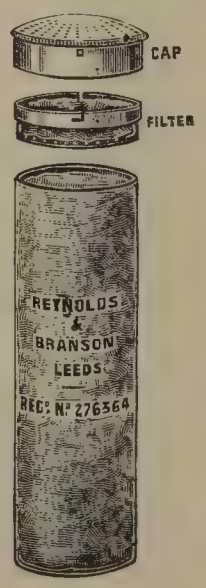
On Friday afternoon a man named Ezbon Holding, of Bury, Lancashire, went into the shop of Mr. Chapman, photographic chemist, Albert Square, Manchester, to make some purchases, when he fell down and died almost immediately from heart disease.

Mr. William McMullan, chemist, Belfast, has been the recipient of a handsome solid silver tea and coffee service from the employés of the drug and chemical firm of Thomas McMullan and Co., on the occasion of his marriage.

NEW IDEAS.

STERILISING CELLULOID CYLINDER.

This article is the latest outcome of Mr. Fred Reynolds' inventive genius. It consists of a transparent celluloid cylinder about ten inches in length and three inches in diameter, which is intended to be used by medical men for keeping surgical dressings



sterile when carried about in the operating bag or standing on the consulting room table. This object is attained by means of an inner perforated tray fitted at the top which is filled with cotton-wool. The outside lid being also perforated, an effective air filter is constructed, hence dressings stored in the cylinder are preserved from contamination indefinitely. Reynolds and Branson, 13, Briggate, Leeds, are the patentees and proprietors.

DIMATOS.

In the account given in the present issue (see p. 193) of Southall Brothers and Barclay's exhibit at the National Skating Palace, brief mention is made of the fact that they are bringing before the trade a newly-discovered infusorial earth, to which they have given the name of Dmiatos. In regard to its chemical composition, it contains about 98 per cent. of pure silica, which shows it to be of a remarkable degree of purity, and in its natural condition as obtained from the pocket it presents a remarkable contrast to other infusorial earths, such as kieselguhr. As put on the market it is of a pure white colour and silky white texture, qualities which, when considered in conjunction with its purity, are quite sufficient to recommend it to the notice of pharmacists as a filtering medium and clarifying agent, as well as a basis for the preparation of a variety of toilet articles, such as violet powders, dentifrices, plate powders, etc. Its appearance when examined under the microscope is interesting, in fact, it is the uniform size and peculiar form of the ultimate particles which constitute its distinctive characteristics and give to it exceptionally useful properties. Southall Brothers and Barclay, Birmingham, are the sole consignees for the United Kingdom.

LATE ADVERTISEMENT.

Assistants Wanted.

Qualified Assistants wanted for Cape Colony and Natal. Good salaries paid to steady and competent men. Passages paid and agreements to be signed. Apply, stating full particulars as to previous experience to Chemist, care of John Murdoch & Co., 52, Leadenhall St., E.C.

SPECIAL NOTICE.—STUDENTS' NUMBER OF THE JOURNAL.—The 'Pharmaceutical Journal' for September 12 next will be specially devoted to educational matters of interest to pharmacists. Information will be given respecting the various institutions in Great Britain and Ireland where courses of instruction are provided for pharmaceutical students, and the secretaries of such institutions are requested to furnish full particulars without delay. All communications should be addressed to the "Editor," 17, Bloomsbury Square, W.C.

MARKET REPORT.

[*Specially compiled for the Pharmaceutical Journal.*]

[*The quotations here given are in all cases the lowest net cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.*]

LONDON, SEPTEMBER 3, 1896.

The holiday season has had its usual effect upon the produce markets, which have not been productive of anything in the nature of a striking change during the last week. In the chemical market carbolic acid is steady at unchanged rates, whilst coal distillation products are very strong. Citric acid is a trifle easier, tartaric acid is quiet, and cream of tartar unchanged. Permanganate of potash continues very scarce and dear, quicksilver is firmer in second hand, whilst copper sulphate is very quiet. Amongst the fine chemicals, glycerin is firm, camphor is unchanged but steady, both for the refined and crude article, whilst quinine is decidedly firmer since last week. Menthol continues quite neglected. The quarterly sales of cinnamon bark were held on Monday, and passed off briskly. At the fortnightly drug sales held to-day few changes were noticeable. Ipecacuanha of both varieties was neglected. Jamaican sarsparilla was firm, the same applying to this variety of honey. Gum elemi sold at lower rates, whilst ergot of rye was dull at a decline. There was a fair demand for benzoin gum, whilst Cape aloes is decidedly cheaper. Buchu leaves are steady, and the same applies to areca nuts and canella bark. Jamaican bees wax is rather easier, shellac is quiet, whilst the opium market is dull. The essential oil market is quite featureless, whilst spices generally show little alteration. Full details will be found below:—

ACACIA (GUM).—There has been a fair inquiry privately for *Persian* so-called insoluble gum, but little business seems to have resulted, as holders are very firm. The current quotations are as follows:—Fine picked, 21s. to 22s.; good sorts, 15s. to 16s.; ordinary sorts, 13s. to 14s.; reddish picked, 16s., and block, 8s. to 10s. per cwt. At to-day's sales 86 packages were offered, but there was practically no inquiry, the only parcel sold being 6 bags of dark brown *Manilla* pickings, which, offered without reserve, realised 20s. per cwt. *Trieste* gum was bought in at £6 12s. 6d. to £7 10s. for yellowish picked, £6 10s. to £7 for grain, and £8 15s. for fine pale, whilst *Soudan* sorts were withdrawn at 62s. 6d. to 75s. per cwt.

ACID, CARBOLIC.—The market is steady, with quotations remaining as last reported:—*Crystals*, 34° to 35° C., 6¼d.; 39° to 40° C., 6¾d.; 39° to 40° C. (*detached crystals*), 7¾d. per lb. *Crude* still quotes at 2s. for 60 per cent. and 2s. 4d. per gallon for 75 per cent. *Liquefied* and *cresylic* are both unaltered at 1s. per gallon.

ACID, CITRIC.—The market is quiet. Makers of *English* acid now offer on the spot at 1s. 2½d. per lb. At to-day's drug sales 2 casks were bought in at this figure. *Concentrated lemon juice* still quotes at £13 10s. to £13 15s. per pipe *f.o.b.* Messina.

ALOES.—At to-day's drug sales 355 packages of all varieties were offered. *Cape* aloes, which was represented by 101 cases, sold at a decline of about 1s. per cwt. for the better qualities, whilst the lower grades showed a drop of 2s. About 80 cases sold as follows:—Good bright hard, 23s. 6d.; fair seconds, 21s. to 22s.; medium ditto, rather drossy, 19s. 6d. to 20s. 6d., whilst mixed grades realised 19s. for fair softish, down to 15s. 6d. for very drossy. A parcel of *East Indian* aloes in skins sold at 27s. for fair black, and 9s. for drossy soft. *Curacao* aloes was again in good supply, and sold freely at 24s. 6d. to 29s. 6d. for fair to good livery, 18s. for medium capey, 14s. for ordinary ditto, down to 10s. 6d. for common dull quality. Thirty-five kegs of soft *Socotrine* aloes of good aroma were bought in at 80s. per cwt.

AMBERGRIS.—Three tins, amounting in all to about twenty ounces, were offered to-day, but none changed hands. Fine quality was bought in at 82s. 6d. per oz.

AMMONIACUM (GUM)—Still very dull of sale. To-day medium pale gum, part loose and part block, was bought in at 50s. per cwt.

ANNATTO SEEDS—Are still quite a dead letter. At the drug sales to-day 10 cases of *annatto paste* imported from New York, offered without reserve, were taken out without a bid being made, whilst a barrel of fair *Madras* seed was bought in at 3d. per lb.

ARECA NUTS.—The market is steady. To-day 3 bags of fair quality sold at 12s. per cwt.

ASAFŒTIDA (GUM).—Moderate sales have been made during the last few days owing to holders having somewhat modified their views. The current quotations are from 30s. to 70s. per cwt. for ordinary lump to good pinky almondy block.

BERZOIN (GUM).—The supply offered at to-day's drug sales was again extensive, amounting altogether to nearly 400 packages. *Sumatra* gum, which was represented by 127 cases, was nearly all bought in, but £7 15s. was paid for good seconds with nice clean almondy centres but slightly false packed corners, whilst twenty cases of fair quality with pale centres, but rather false-packed sides, sold at £6 to £6 7s. 6d., and ordinary ditto, with fair centres, but very barky sides, at 90s. per cwt. *Siam* gum was in unusually large supply, and the catalogue included some fine parcels, most of which, however, were bought in. Medium to bold pale, clean, loose almonds, were bought in at £20. to £25, whilst £11 5s. was accepted for medium palish almondy block. In addition, £7 was paid for pale siftings in block, 87s. 6d. for brown drop in block, 85s. to 90s. for greyish ditto, and 40s. to 41s. for ordinary siftings in block. A parcel of exceptionally fine pale loose almonds was bought in at £40 per cwt. *Palembang* gum was all bought in, fair almondy seconds at 32s. to 35s. (a bid of 30s. being refused for the first lot), and 27s. 6d. for ordinary thirds. Glassy *Penang* gum with dark corners was also bought in at 90s. per cwt.

BIRDLIME.—A single case out of ten cases of *Japanese* birdlime offered in auction, sold at 6½d. per lb.

BUCHU LEAVES.—The market is steady. Of twenty-four bales offered to-day, good *round* green leaves sold at 3d. per lb. to the extent of three bales.

CAMPHOR (CRUDE).—The market remains quiet but steady. There has been a fair enquiry for *China* camphor near at hand at 102s. 6d., *c.i.f.*, whilst for distant shipment there are sellers at 100s., *c.i.f.*, and buyers at 92s. 6d., *c.i.f.* *Japan* is reported firmer, being now quoted for distant shipment at 117s. 6d. per cwt., *c.i.f.* No business seems to have been done.

CANADA BALSAM.—Ten casks of fair quality balsam were offered to-day, 5 of which sold at 12s. per lb.

CANELLA ALBA.—The market is firm. Fair bright quill sold in auction at 24s. per cwt.

CANNABIS INDICA.—Five bales out of 15 offered, consisting of good greenish stalky tops, sold at 3½d. per lb., showing a steady market.

CANTHARIDES—Are very slow of sale. To-day 5 cases of fair *Chinese* flies, rather dusty, were bought in at 1s. per lb.

CARDAMOMS—Were in small supply to-day, but an excellent demand was shown, and practically all sold at fully steady rates. *Ceylon-Mysore* sold at 3s. 3d. to 3s. 4d. for fine pale plump, 2s. 11d. to 3s. 1d. for good pale ditto, 2s. 6d. to 2s. 9d. for good yellowish, and 2s. 5d. down to 2s. 1d. for medium yellow, part split, to ordinary

shrivelled brown. *Seed* sold at an advance of 1d. per lb., 3s. 1d. being paid.

CASCARA SAGRADA—Is slow of sale. On the spot the nominal value of good quality bark is 19s. per cwt. To-day seventy-three bales of fair quill from San Francisco were bought in at 19s. to 21s. per cwt.

CACAO BUTTER—Is easier. At the monthly sales 300 cases (representing 30 tons) of *Cadbury's* make sold at an average of 13⅜d. per lb., against 14d., which was the average price paid in August.

CASCARILLA.—At to-day's drug sales 88 packages were offered, the majority of which were bought in. For fair greyish quill, 37s. was paid, whilst medium ditto, rather stringy, realised 28s., and siftings, 20s. per cwt.

CHAMOMILES.—The market is very firm and for new crop *Belgian* flowers 70s. to 72s. 6d. is quoted on the spot for good quality, according to holder. To-day ten bags of fair quality *Belgian* flowers, 1895 crop, were bought in at 47s. per cwt.

CHIRETTA.—Fair quality was bought in at to-day's drug sales at 3½d. per lb.

CINNAMON.—The supply offered at the quarterly sale held on Monday last was only small, amounting to 779 bales of *Ceylon* bark against 667 at the same time last year. A good demand was shown, and nearly all the catalogue was disposed of at prices showing a steady rate to an advance of ½d. per lb. The following prices were paid:—Good to fine firsts, 1s. to 1s. 4d.; ditto seconds, 1s. to 1s. 2d.; fair to good thirds, 10d. to 1s. 1d.; ditto fourths, 9d. to 11d. Unworked kinds sold at 9d. to 1s. 1d. for firsts down to 8¾d. for fifths. *Chips* sold at 3d. for ordinary coarse and fine *pickings* at 8½d. per lb.

CINCHONA.—A very limited supply was offered to-day. A parcel of *Maracaibo* bark was all bought in at 7d. per lb. for good quality, although a bid of 5½d. was to be submitted to the holder. In addition, 5 cases of *East Indian* bark in quills sold at 2d. per lb.

CIVET.—Nine horns were offered in auction, but no business resulted. Fair to good quality was bought in at 40s. to 50s. per oz.

COCA LEAVES.—A large parcel of *Huanoco* leaves was offered, but there being no bid it was taken out without mention of price.

COLOCYNTH.—The market is perhaps a trifle easier. At to-day's sales 12 cases of *Turkey* colocynth were offered, 2 of which sold, 2s. 4d. being paid for ordinary dull apple, part broken. For good quality 2s. 8d. to 2s. 9d. per lb. is asked. A parcel of fair *Spanish* was bought in at 1s. 2d. per lb.

COPAIBA (BALSAM).—The market is quiet but firm, good qualities being still in poor supply. Good *Maranham* quotes at 2s. to 2s. 1d., *Para-Maranham* at 1s. 5d. to 1s. 11d., and *Bahia* at 1s. to 1s. 4d. per lb.

CREAM OF TARTAR.—The market is quiet but steady. On the spot best white *French crystals* are quoted at 86s. to 87s., whilst for *German* brands of *powder* 88s. to 91s. is quoted, according to brand. For shipment from Bordeaux 82s. to 83s. per cwt., *f.o.b.*, is still quoted.

CUBEBS—Are very slow of sale, but holders do not seem disposed to give way in price. Fair *Singapore* berries were bought in at 35s. to 37s. per cwt.

CUTTLEFISH.—Sixteen barrels of fair quality, part broken, were bought in at the drug sales at 2½d. per lb.

DRAGON'S BLOOD.—In moderate supply, but only five cases sold, £6 being paid for fair seedy lump. Fine *Singapore* gum was bought in at £10, and medium saucers at 85s. to 105s. A parcel of *Zanzibar* dragon's blood drop and siftings of good quality was taken out.

ELEMI (GUM)—Is again lower. To-day 20 cases of fairly clean *Manilla* gum, of moderate aroma, sold at 17s. 6d. per cwt.

ERGOT OF RYE—Sold at the drug sales at very low rates, but the quality was for the most part poor. A parcel of *Spanish* ergot sold at 2¾d. to 3¼d. per lb. for very wormy quality. In addition, 14 bags of fair *Russian* ergot offered without reserve, sold at 4¼d. to 4½d. per lb.

GALBANUM (GUM).—Very quiet. Twenty-four cases were bought in to-day: fair gum at 1s. 10d., barky ditto at 1s., and woody pickings at 9d. per lb.

GALLS—*Persian* galls are quite neglected, but the market is steady. *Blues* are quoted privately at 51s. to 53s.; *greens* at 42s. to 45s.; *sorts* at 48s. to 50s., and *whites* at 38s. to 43s. per cwt. Thirty bags of *Turkey* galls sold at the drug sales at prices ranging from 47s. down to 20s. per cwt.

GAMBOGE.—In small supply, and very little demand shown. The only lot sold was a case of good mixed pipe and block, for which £9 was paid.

GINGER—At the weekly sales a good supply of *Cochin* root was offered, but the demand was only poor. Rough kinds sold at 32s. for fair washed, 21s. 6d. for ordinary shrivelled ends, and 19s. to 20s. for common cuttings. Native cut kinds sold at 69s. 6d. for fine bold chiefly cut, 52s. 6d. for medium to good bold half cut, and 37s. 6d. for medium to small ditto. *Bengal* root was bought in at 13s. 6d. to 14s., whilst hand-scraped *East Indian* sold at 18s. to 20s., mouldy *Japan* at 15s. to 15s. 6d., damaged *African* at 20s. 6d., mixed *Jamaican* at 83s., and lean *St. Kitts* at 45s. per cwt.

HONEY.—An average supply was offered to-day, and a fair amount changed hands. *Jamaican* honey sold at 23s. 6d. to 25s. for nice ambery, and 18s. to 20s. for ordinary brown, rather foul. A parcel of fine pale *New Zealand* honey realised 41s. per cwt., whilst *Honolulu* was bought in at 35s. per cwt.

IPECACUANHA.—Privately this article has been neglected, and affairs were not greatly improved to-day. Out of twenty-three serons of *Rio* (Brazilian) root offered, six sold at 5s. 6d. to 5s. 8d. for fair damaged root, whilst *Carthagena* (Columbian) root was bought in at 5s. to 5s. 6d. per lb.

JALAP.—A parcel of good *Vera Cruz* root was bought in at to-day's sales at 8d. per lb. Privately 7d. per lb. is asked. A novelty was offered in the shape of a box of *Madras* jalap. It was in good condition and very heavy, but only realised 6¼d. per lb. in auction.

KAMALA.—Five cases of good quality sold in auction at 9d. to 10d., whilst a single case of another lot realised 3d. per lb.

KINO (GUM).—Genuine *Malabar* kino is held for 11s. per lb. A parcel of astringent garnet-coloured gum mixed with wood was bought in at 35s. per cwt.

KOLA NUTS.—At the spice sales four barrels of dried *Grenada* nuts sold at 3d. to 3½d. for small to medium, and 4½d. for mouldy. To-day about 30 packages were shown, but the only lots sold were a box of small *West Indian* kolas, for which 5d. per lb. was paid, and three packages of fair, sound quality, which realised 6½d. to 6¾d. per lb.

MYRRH (GUM)—Continues in large supply, but is very difficult of sale, except when offered without reserve. To-day fair pickings sold at 26s., siftings at 31s., and low pickings at 20s. to 21s. per cwt.

MUSK.—A good supply was offered to-day but none was sold except some *trimmings*, for which 3d. per oz. was paid. Medium to bold damp blue skin and underskin (Pile II.) was bought in at 60s., and doubtful quality (pile III.) at 27s. per oz.

NUX VOMICA.—Eighteen bags of small dull *Madras* sorts sold in auction at 3s. whilst fair *Calcutta* were bought in at 7s. per cwt.

OILS (ESSENTIAL).—The prices for the new crop *Otto de Rose* have not been fixed, although they were expected this week. *Star Anise* oil is a trifle easier, 7s. 9d. per lb. being now the spot value. *Cassia* has been in good demand during the last few days, especially the better grades, but there is little to be had. Nominally, 70 to 75 per cent. oil quotes at 7s. 6d. to 7s. 9d., and 80 to 85 per cent. at 8s. Business has been done in oils below sixty per cent. aldehyde strength, at 4s. 6d. to 5s. 6d. per lb. *Peppermint* oils of all descriptions are neglected. At to-day's drug sales, a number of *essential oils* were bought in, including *Wintergreen* at 7s. per lb., *Eucalyptus globulus* ("Platypus" brand, 5·54 per cent. eucalyptol), at 2s. 3d. per lb. *Peppermint* ("Kobayashi" brand) at 4s. per lb. *Lemon grass* at 2d. per oz.; *Fennel* at 1s. 6d. per lb., *rose* at 3½d. per oz., and *Geranium* at 4d. per oz.

OILS (FIXED) AND SPIRITS—*Cotton* is quiet but steady, *refined* oil being held for £15 10s. to £16 10s. on the spot, according to brand and package. *Coconut* is steady at unchanged rates, *Ceylon* being quoted at £23, and *Cochin* at £26 10s. on the spot. *Linseed* is a trifle easier, oil in barrels being now procurable at £16 12s. 6d. on the spot. *Palm* is firm at £21 for *Lagos*. *Olive* is unchanged at £29 for both *Spanish* and *Levant*. *Rape* is firm at £25 10s. to £26 for *refined* oil on the spot. *Turpentine* is a trifle easier, *American* spirit being now quotable at 18s. 4½d. to 18s. 6d. on the spot. *Petroleum* is unchanged at 5d. to 5⅛d. for *Russian*, 5¾d. to 5⅞d. for *American*, and 6½d. to 6⅝d. per gallon for *water white*.

ORRIS ROOT.—Quiet. None was sold to-day, although several parcels were offered. Good picked *Florentine* root was bought in at 75s. per cwt., whilst *Aden* sorts were withdrawn at 20s. to 24s. for fair, and 10s. for very lean sorts.

PERU (BALSAM).—The market is quite neglected, the nominal spot value being 7s. 9d. per lb. To-day four cases of recent import were bought in at 8s. per lb.

QUICKSILVER—Is rather firmer in second hand, although there is no change in the importers' quotation, which remains £6 10s. per bottle. Second-hand holders ask £6 9s. to £6 9s. 6d.

QUININE.—The market is firmer. Although there has not been a large amount of busi-

ness done, there is a decidedly steadier tone at a fractional advance in price. Holders do not seem to be inclined to sell, although bids of 10¼d., followed by 10⅜d., and even 10½d., have been made and refused for the best *German* brands. There have been some small sales of *B and S* and *Brunswick* during the last few days at 10½d. per oz.

Rhubarb.—The market is quiet. At the sales to-day ten cases only out of over a hundred offered changed hands, the following being the prices paid:—*Canton*: Medium to bold round, good fracture, 1s. 1d.; good trimmings, 1s. 1d. to 1s. 2d.; bold rough 11½d.; low medium round pickings, 9d. per lb. *Shensi*. Three cases of good medium round root sold at 1s. 6d. per lb.

Sandalwood.—At auction, 98 bales of *chips* were bought in at £15 per ton.

Sarsaparilla.—The market is steady. To-day genuine native *Jamaican* sarsaparilla sold at 1s. 8d. for sound, and 1s. 6d. to 1s. 7d. for damaged, whilst for *Lima-Jamaica*, 1s. to 1s. 4d. was paid, according to condition. *Honduras* were bought in at 1s. 2d. per lb.

Scammony.—Good *root* was bought in to-day at 50s., and fair ditto at 40s. per cwt. A parcel of *Scammony resin* was also bought in at 32s. 6d. for virgin resin, down to 4s. for drossy ditto.

Senega Root — Is dull of sale, the nominal spot price being 1s. per lb. To-day 8 bales of good, slightly chumpy root were bought in at 1s. 2d. per lb.

Senna—Nearly 500 bales of new crop *Tinevelly* leaves were offered to-day and met with an excellent demand at full rates, the following being the prices paid:—Medium green leaves, 3½d. to 4d.; small to medium green, 2¼d. to 3¼d.; small to medium dull, part brownish, 2d. down to ¾d. per lb. *Alexandrian* leaves were bought in at 1s. per lb.

Shellac.—Privately only a very small business has been done, the demand being very slack. The arrival market is unchanged, there being sellers of *TN Orange*, October to December steamer, at 80s. per cwt., *c.i.f.* terms. The supply at the weekly sales was moderate, and included a further amount of sea-damaged *Orange*. Sound quality was slow of sale, and although high prices were paid for dark blocky, good lac sold at a decline of 2s., fair *TN* being quotable at 82s. per cwt. *Garnet* and *Button* were all bought in. The following were the quotations: *Second orange*: Fine pale *AA* in circle was bought in at 98s. *TN orange*: Fair to good sold at 82s. to 84s.; dark blocky, 80s; damaged block, 67s. to 74s. *Garnet* was bought in at 83s. for blocky *AC*. *Button* was bought in at 87s. to 92s. for ordinary to fair *BL* 1.

Spermaceti—Is dearer, and the stock on the spot is said to be limited. There are now no sellers of good refined *American* under 1s. 6d. per lb.

Spices (Various.—*Cloves* are slow of sale. In auction 100 bales of medium *Zanzibar* sold without reserve at 2d. per lb., showing an easier market. *Cassia vera*: Coarse *Padang* quill was bought in at 22s. per cwt. *Nutmegs* are firm, but only a few cases of *Penang* sold, 3s. being paid for 62's; 6d. for shrivelled 174's. *Bombay* sold at 1s. 8d. for mouldy 84's, and 4½d. to 5d. for broken and wormy. *West Indian* sold at steady rates; fair to good shape and colour realising 2s. 10d. for 62's, down to 1s. 1d. for 101's. *Mace* is quiet, only three cases of *Penang* selling at 2s. 4d. for very bold, bright palish, slightly wiry. *Singapore* were bought in at 1s. 3d. for ordinary brownish, and 1s. 2d. for pickings. *Pimento* is very dull of sale, only fifteen bags being sold at 2¼d. for fair quality. *Capsicums* were bought in at 18s. for ordinary small dull red *Bombay* and 20s. for small long *Japan*. *Chillies* were bought in at 35s. to 40s. for medium *Zanzibar*, whilst three bales of *Chinide* sold at 37s. 6d. per cwt. *Long pepper* sold without reserve at 14s. 6d. for wormy of old import. *Pepper* and *White pepper* was nearly all bought in. *Arrowroot*: Thirty barrels of fine *W* in diamond sold at 3½d. per lb.

Tonquin Beans—Are quiet. Privately there have been small sales of fair black *Para*, partly frosted, at 1s. 8d., whilst medium to good black are quoted at 1s. 4d. to 3s., and low pickings to fair at 4d. to 1s. per lb. Bold frosted black *Angostura* beans are worth 7s. 6d. per lb. nominally.

Turmeric—Remains very slow of sale. At the weekly sales *Bengal* was bought in at 7s. to 7s. 3d., and *Cochin* rough finger at 7s. 6d. Several parcels were also bought in to-day, including fair *Bombay* finger at 10s., *Madras* at 11s., and *Cochin* at 7s. per cwt.

Wax (Bees).—*Jamaican* beeswax was in fair supply to-day and sold freely, but the prices paid show a decline of about 2s. 6d. per cwt., £7 17s. 6d. to £8 2s. 6d. being the limits, according to quality. In addition, *Australian* sold at £6 10s. to £6 17s. 6d., *South American* at £6 7s. 6d., and wormy *Madagascan* at £5 per cwt.

Wax (Vegetable).—*Japan* is quiet at 37s. 6d. on the spot for pale *squares*, whilst for arrival 35s. *c.i.f.* is quoted. *Carnauba* wax is quiet, yellow being quoted privately at 120s. to 130s., and grey at 80s. to 100s. per cwt. Ten cases of fair greyish were bought in to-day at 80s. per cwt.

Newcastle Chemical Market, September 1.—During the week a somewhat better demand for bleaching powder and soda ash has been experienced. Sulphur is still very firmly held at the advanced price. Other articles slow at unchanged values. Prices are:—Sulphur, £4 15s.; bleaching powder, £6 10s. to £7 10s.; soda ash, 52 per cent., £4 5s.; soda crystals, 37s. 6d. to 45s.; caustic soda, 70 per cent., £7 5s. to £7 10s.; higher strength, £9s.; alkali, 52 per cent., £5 per ton.

Liverpool Market Report, September 2. — Canaryseed is without animation, sales are few, and prices for Turkish range from 26s. to 27s. per 464 lbs., 100 bags having been sold at the lower figure. Ginger: Of Sierra Leone 50 bags were disposed of for 20s. per cwt. Chillies: A small lot of Sierra Leone sold ex-store at 32s. 6d. per cwt. Honey: Chilian pile 1 has been selling in small quantity at 21s. per cwt. Quillaya bark: Nine tons of Chilian sold at auction for £12 5s. to £12 15s. per ton. Castor oil is in moderate demand at steady rates, Calcutta "good seconds," 3d. per lb. ex-quay; 3⅛d. to 3¼d. ex-store. French 1st pressure, 2½d. ex quay, 2⅞d. to 2⅝d. ex-store; Madras, 2½d. to 2⅝d; Belgian, 2½d. per lb. Olive oil: The market is strong in tone, Malaga, £29 to £30 per tun; Seville, £28 10s. to £29; Syrian still offering at £28. Linseed oil remains steady at last week's rates. Cottonseed oil: Liverpool refined, 15s. 6d. to 16s. per cwt.; American, 16s. to 16s. 6d. Spirits of turpentine, 19s. 3d. per cwt. Petroleum is firm in tone, with a tendency to rise, Russian, 5½d. per gallon; American, 6¼d. to 7½d. per gallon. Chemicals: Sal ammoniac, 37s. per cwt.; 35s., seconds. Sulphate of ammonia: £7 17s. 6d. per ton. Bleaching powder: £7 to £7 5s. per ton. Copperas, Lancashire: 38s. per ton; Welsh, 36s. Sulphate of copper: £16 5s. per ton. Sulphur: Roll, £5 10s.; flowers, £7 14s. per ton. Potashes: 20s. to 20s. 3d. per cwt. Pearlash, 35s. per cwt. Cream of tartar is steady and quiet at 94s. per cwt. for finest white. Prussiate of potash, 7¼d. per lb. Chlorate of potash, 4½d. per lb. Caustic soda: 70 per cent., £7 12s. 6d. to £7 15s. per ton; 60 per cent., £6 12s. 6d. to £6 15s. Soda crystals: £2 10s. per ton. Bicarbonate of soda: £7 per ton. Borax: Lump, 20s.; powder, 21s. per cwt. Nitrate of soda: Rules as last week, 7s. 10½d. to 8s. 1½d. per cwt.

Manchester Chemicals and Drysalteries, September 2.—A slightly better feeling has been prevalent during the past week, although there has been no change in heavy chemicals. The upward movement in recovered sulphur continues, and figures are now £4 15s. to £5 in bags, with prospect of a further rise. Arsenic is a turn easier, and naphthas are again lower, both for solvent wood and miscible, which may be quoted 2s. 9d. per gallon, with small demand. Yellow prussiate is fairly firm at 7¼d. to 7½d., foreign 6½d. to 7d. Green copperas is unchanged for best Lancashire, which locally is in demand, especially in the face of short supply of Welsh. Benzols are firm, closing with an upward tendency. Sulphate of ammonia continues to rule low. Lime salts dull at £4 2s. 6d. per ton for Welsh at station, Manchester. Sulphate of copper has had a serious drop in some cases, £15 15s. has been quoted, but best brands are £16 10s. to £17, delivered here. Glauber salts 23s. to 24s. per ton, bags; Epsoms 65s. per ton. Acids are easier.

Mineral Constituents in Vegetation.—In a recent number of the *Gardener's Chronicle* Mr. J. J. Willis, of Harpenden, a well-known authority on the subject, draws attention to the influence and special functions of individual mineral constituents in vegetation, based largely on results obtained by Lawes and Gilbert at Rothamsted. It is fairly well established that the presence of potash is essential for the formation of the chief non-nitrogenous matters—starch and sugar. The published results of experiments at Rothamsted have shown that the proportion of potash in the ash of wheat was the greater the better matured the grain—that is the larger proportion of starch it contained; in the case of the potato a greatly increased amount of potash was found in the heaviest crops—that is to say, in those in which the largest amounts of starch have been found. Whilst the use of nitrogen in manure gives, in the case of potato crops, a large increase in the amount of the non-nitrogenous constituent starch, in the case of root crops the same agent, in combination with potash, produces a large increase in the non-nitrogenous constituent sugar.

EXCHANGE—OFFERS AND WANTS.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Books, etc.

Ganot's 'Physics,' new, 1893 edition; exchange for Attfield's 'Chemistry,' must be recent edition and in good condition. Apply to—H. L. Hass, 261, Burdett Road, Limehouse, E.

'Pharmaceutical Journal,' from commencement to present date, first 7 vols., bound. What offers?—Parker and Son, 6, Botchergate, Carlisle.

A book of 130 Well-tried Recipes for Chemists and Druggists, comprising well-selected formulæ for general, remedial, veterinary, toilet, and everyday preparations. Post free, 1s. 6d.—Tully, Chemist, Hastings.

Clowes' and Coleman's 'Quantitative Analysis,' 3rd edition, 1895, 5s. 6d.; Valentin and Hodgkinson's 'Qualitative Analysis,' 8th edition, 3s. 6d., post free; both in excellent condition.—Eugene Henry, Loampit Vale, Lewisham.

Miscellaneous.

One large Carboy, pear-shaped stopper; 2 large specie jars; one outside lamp, with iron bracket, for sale.—Trickey, Chemist, Eastbourne.

Three dozen Guy's Tonic, clean, will be sent, carriage paid, for £3 10s. 6d., cash with order.—Knaggs, Hawes, R.S.O.

Dobson's famous black-leg drinks, ½ doz. 5s. 6d., and 2 doz. 3s. sizes, good condition, take half price.—Clarke, Chemist, Woburn.

Hair Curler, like "Frizetta"; Balsam Aniseed, like "Powell's"; Gripe Water, like "Woodward's", White Embrocation, like "Elliman's." Recipes 1s.; the lot 2s. 6d.; samples 4d.—Chemist, 4, Woronzow Terrace, St. John's Wood.

WANTED.

Upright Show Case, about 50 inches high, 24 wide, with glass shelves, in good condition.—Knaggs, Hawes, R.S.O.

Two Upright Show Cases, glass shelves, width 24 and 27 inches, height 36 to 40 inches or about; cheap and in good condition.—Knaggs, Hawse, R.S.O.

NEWS IN BRIEF.

MORE than half the world's production of quinine is said to be disposed of in the United States.

MR. A. SEYMOUR, of the Medical Hall, Ennis, Ireland, has been appointed contractor for the supply of drugs, etc., to the local union.

AT the Tavistock annual Brewster Sessions, last week, Mr. R. D. Doble, chemist, of Tavistock, was granted a new licence to sell medicated wines.

CHARLOTTE HARRIS, of 33, Aberystwith Road, Cardiff, took an overdose of laudanum to produce sleep. The dose was too successful, and an inquest was held.

ERNEST RODGERS, 23, herbalist's assistant, died at Oldham from the effects of carbolic poisoning. The jury returned a verdict of "committed suicide whilst of unsound mind."

THOMAS BROWN, 65, of Wood Lincoln, purchased laudanum from a chemist at Codnor, which he drank while on his way home. The efforts of two doctors failed to save his life.

MR. E. WELLINGTON, chemist and druggist, of Taunton, has removed to No. 15, Hammett Street, the premises there being more commodious and convenient for the carrying on of his business.

WILLIAM MURPHY, 43, cabinet maker, of Walthamstow, lost his situation, paid his debts, got drunk, and spent the few coppers remaining on chlorodyne and laudanum. Charged with attempting to commit suicide, he was sent for trial at the Sessions.

SAUNDERS BROTHERS, analytical and manufacturing chemists, dealers in druggists' sundries, and photographic requisites, have removed their offices and show-room to 333, Gray's Inn Road, King's Cross, W.C. Telegrams "Three Threes, London," late Rochester Square, N.W.

MR. F. H. ALCOCK, F.I.C., F.C.S., pharmaceutical chemist, 9, Temple Chambers, Broad Street Corner, Birmingham, has been presented with a marble clock by grateful present and past students on the occasion of his marriage.

HERR WICKERSHEIMER, the well-known chemist and inventor of the preparation bearing his name for preserving human objects and the carcases of animals for anatomical studies, died on August 28.

MR. JOHN HERBERT ANDREW, pharmaceutical chemist, of Oldham, has taken over the business at the Pool Bank Pharmacy, Bollington, near Macclesfield, lately carried on by Mr. John Wright, pharmaceutical chemist.

A SIMILAR verdict was returned in the case of William Thomas Oram, 21, drug sampler of Mincing Lane, E.C. He became engaged, robbed his employer for money "to take the girl about," was dismissed, went to Hyde Park and drank carbolic acid.

AT Holmwood, a boy nine years of age, seeing a stone ginger-beer bottle on a table in the bedroom, took a drink of what he apparently thought to be ginger-beer. The verdict at the inquest was "accidental poisoning by carbolic acid."

GEORGE NAY, 28, a labourer, of Stratford, said "I have been enjoying myself for the last day or two." He finished up his enjoyment by adding two ounces of oxalic acid to his beer. The magistrate remanded him to the House of Detention.

MARRIAGE.

DAWSON—CLIFTON.—On August 27, at Victoria Street Church, Derby, by the Rev. Geo. Hunsworth, M.A., Henry G. W. Dawson, pharmaceutical chemist, second son of Frederick Dawson, of Derby, to Alice, youngest daughter of Frederick Clifton, homœopathic chemist, also of Derby.

TRADE NOTES AND NEWS.

FRAUDS BY THE MANAGER OF A DRUG STORE.—Alfred Edward Sparkes, manager at the wholesale drug stores of Messrs. J. T. Dobb and Son, of Westbar and Spring Street, Sheffield, was on Tuesday committed to prison for two months with hard labour for a series of wholesale robberies from the stock of which he had charge. The prisoner being manager of Messrs. Dobb's stores, his duty was to supply customers with goods on their production of an order signed in the main shop, and under no circumstances to take money. It was found that for twelve months past he had been supplying a master painter named Lawrence with oil, turpentine, and paint from the stock, for which he was paid a totally inadequate price. Lawrence was charged in company with Sparkes with receiving the goods, knowing them to have been stolen, and was also sent to prison for two months.

LATE ADVERTISEMENTS.

Assistant Wanted.

JUNIOR, in-doors, required end of September. Light retail and dispensing business. Apply KENT, Chemist, East Molesey.

Businesses for Disposal.

FOR immediate disposal.—An old-established Drug BUSINESS, in wealthy district near Hyde Park. Apply to CHEMIST, 26, Sussex Gardens, W.

MIDLANDS.—Genuine country BUSINESS (Drugs and Stationery). Returns £1000, increasing. Profits £300. Large stock. Dentistry opening. Good premises and garden. Lease. Satisfactory causes for leaving. Price £600, part may remain. No agents. Apply, CHIRATA, "Pharm. Journal" Office, 5, Serle St., London, W.C.

CHEMIST'S BUSINESS for disposal in busy manufacturing town near Birmingham. Profitable and thoroughly genuine. Good shop and convenient house. Returns over £800. References given and required. Apply, J., care of Messrs. Evans, Sons & Co., 16, Ethel St., Birmingham.

MARKET REPORT.

[*Specially compiled for the Pharmaceutical Journal.*]

[*The quotations here given are in all cases the lowest net cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. Is is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.*]

LONDON, SEPTEMBER 10, 1896.

The volume of business done in the produce market during the week has not been very extensive. In the chemical market the principal alteration we have to note is a partial recovery in the price of quinine, which has sold in second-hand at advancing rates, without, however, being accompanied by any change in the makers' quotations. Tartaric and citric acids are quiet, carbolic acid is easier, but in fair demand, whilst cream of tartar is fairly steady at unchanged rates. Copper sulphate is, if anything, a trifle firmer, whilst arsenic is fairly plentiful. Permanganate of potash is still scarce and dear. Glycerin is quiet but steady. As has been expected for a week or two, the makers of resorcin have raised their prices, whilst the two German manufacturers of pilocarpine have also advanced their quotations for hydrochlorate and nitrate. Benzol is a very strong market. In drugs there are but few changes. Opium is a very dull market, gentian root is said to be tending higher, whilst reports indicate a higher value for orris root. Chamomiles are still a very strong market, poppy heads are dearer, whilst caraway seeds are tending lower. Carthagena ipecacuanha is held for firm rates, whilst Turkey colocynth has sold at full prices. In the essential oil market, star anise oil is a very strong market, whilst there has been a good demand for cassia oil. Peppermint oils of all varieties are flat. Japan wax is firmer, whilst the camphor market is quiet. Full details will be found below of the various articles of interest:—

ACACIA (GUM).—The market is firm for all varieties of *Persian* gum, but the high prices asked prove detrimental to business, which has been for the most part confined to picked gum and sorts. The current quotations are as follow:—Fine picked, 20s. to 22s.; good sorts, 15s. to 16s.; ordinary sorts, 13s. to 14s.; reddish picked, 16s., and block, 8s. to 10s. per cwt.

ACETANILIDE.—The market is very steady, the current quotations of the various makers being for the most part 1s. 4d. per lb.

ACID, CARBOLIC.—The quotation for *crystal* and *crude* acid are lower, but the makers report that there has been a very fair all-round inquiry. The following are the current rates:—*Crystals*, 34° to 35° C., 6d.; 39° to 40° C., 6½d.; 39° to 40° (*detached crystals*), 7½d. per lb. *Crude* is much cheaper, 60 per cent. being offered at 1s. 9d., whilst for 75 per cent. 2s. 1d. is quoted. *Liquefied* and *cresylic* are quoted at 1s. and 10d. per gallon respectively.

ACID, CHRYSOPHANIC.—The market is firm, there being only a limited quantity of *British* made acid available at 25s. per lb. Good *Goa powder* is apparently as scarce as ever here, although a parcel of good quality is said to have changed hands recently in Hamburg at about 5s. 6d. per lb.

ACID, CITRIC.—Quiet. For *English* acid the makers now quote 1s. 2½d. per lb. on the spot. *Concentrated lemon juice* still offers at £13 10s. to £13 15s. per pipe *f.o.b.* Messina.

ACID, TARTARIC.—The market is quiet, but quotations are unchanged. For *English* brands of acid 1s. 3d. per lb. is asked, whilst *foreign* makes, both in *powder* and *crystal*, offer at 1s. 1¾d. per lb.

AMMONIA COMPOUNDS.—*Sulphate* is dull of sale, but quoted at unchanged rates. On the spot grey 24 per cent. is worth £7 15s., whilst *Hull* is quoted at £7 12s. 6d. *Leith*, prompt, at £2 10s., *Beckton* at £8, and *Beckton* terms at £7 10s. *Salammoniac* is unchanged at 37s. for *firsts* and 35s. for *seconds*. *Carbonate* is unaltered at 3d. in *casks*, 3⅛d. in *kegs*, and 3¼d. in *jars*, whilst *powder* offers at ¼d. per lb. above these rates.

ASAFŒTIDA (GUM).—The market is quiet, enquiries being restricted to medium kinds. Privately, good pinky almondy gum is quoted at 70s., and ordinary block at 30s. per cwt. During August 68 packages were delivered, making the stock 512, against 902 packages at the corresponding time last year.

CAFFEINE.—Quiet, but quoted at unchanged rates, the makers' quotation being still 18s. per lb. for 100-lb. lots.

CAMPHOR (CRUDE).—This article has been quite a dead letter since our last report, and quotations remain unaltered. *Formosan* camphor near at hand quotes at 102s. 6d. *c.i.f.*, whilst for distant shipment 100s. *c.i.f.* is asked. *Japan* is quoted at 117s. 6d. per cwt., *c.i.f.*, for distant shipment.

CAMPHOR (REFINED).—There have been no changes in the refiners' quotations. *English* makers' prices are still 1s. 6d. for 1 ton; 1s. 6½d. for ½ ton; and 1s. 7d. per lb. for smaller quantities of *bells* and *flowers*, with *squares* at 1s. 7d. and proportionate rates.

CARAWAY SEEDS are offering at rather easier rates; good *Dutch* seed of the new crop being quoted at 20s. 3d., *f.o.b.*

CHAMOMILES—Are again a very firm market, as much as 70s. per cwt. being asked for fine new *Belgian* flowers, whilst other qualities are quoted at various rates down to 55s. per cwt.

COAL DISTILLATION PRODUCTS—Are nearly all offering at lower rates. *Toluol* is cheaper, *pure* being now offered at 2s. 3d. per gallon. *Benzole* is again a very firm market, 50 per cent. being now held for 3s. 2d., whilst 90 per cent. is quoted at 4s. 6d. per gallon. *Creosote* is easier at 1½d. per gallon. *Crude naphtha*: 30 per cent. at 120° C. quotes at 1s. 10d. per gallon. *Solvent naphtha* is quoted at 1s. 8d. for 95 per cent. at 160° C., at 1s. 5d. for 90 per cent. at 160° C., and at 1s. 2d. for 90 per cent. at 190° C. *Anthracene*: 13*A* quotes at 10d *B* at 8d. per unit. *Pitch*: 32s. per ton *f.o.b.* *Tar*: 11s. 6d. per barrel for *refined*, and 12s. for *crude*.

COCA LEAVES.—There is only a limited quantity of either variety now on the market, the whole parcel offered at the last drug sale having been withdrawn during the last few days. For good green *Truxillo* leaves 1s. 1d. per lb. has been paid.

COLOCYNTH.—The market is extremely firm, and 2s. 9d. continues to be readily paid privately for good pale *Turkish* apple. For fair *Spanish* colocynth, 1s, to 1s. 3d. is quoted.

COCHINEAL—Is offering at rather easier rates, and the amount of business done has been only moderate. *Teneriffe* is quoted at 1s. 2½d. to 1s. 3½d. for ordinary to fair greyish; 1s. 3d. for fair black grain, and 1s. 3½d. for good silver ditto.

COPPER SULPHATE—Is quiet, but prices are maintained. The "Anchor" brand is still quoted at £16 10s. in casks, and £17 in kegs *f.o.b.* Liverpool, whilst for other makes £15 17s. 6d. to £16 5s. is quoted.

CREAM OF TARTAR.—The market is quiet, but quotations remain as last reported. On the spot fine white *French* crystals are offered at 86s. to 87s., whilst for *German* brands of powder, 88s. to 91s. is quoted according to brand. For shipment from Bordeaux, 82s. to 83s. per cwt. *f.o.b.* is quoted.

GALLS.—*Chinese* galls remain flat, being quoted nominally at 55s. per cwt. for fair quality. With regard to *Persian* galls, the only varieties to attract attention are the *blue* and *green* kinds, in both of which a moderate business has been done. The current quotations are:—*Blues*, 52s. to 53s.; *greens*, 42s. to 43s.; *sorts*, 48s. to 50s.; and *whites*, 38s. to 43s. per cwt.

GENTIAN ROOT—Has a decided upward tendency. We have heard of as much as 22s. 6d. being asked on the spot for good *French* root in second hand, although probably 21s. to 21s. 6d. per cwt. would still buy.

GINGER.—At the weekly sales *Cochin* root proved very slow of sale, and all the rough kinds were bought in, washed rough at 32s. to 34s. per cwt. The native cut kinds were also all bought in, except 12 cases of fine bold, for which 80s. per cwt. was paid. *Bengal* root was bought in at 14s., and fine *African* at 22s., and wormy ditto at 16s. A parcel of limed *Japan* root sold at 15s. 6d. to 16s. per cwt. for rather mouldy quality. No *Jamaican* root was offered.

GLYCERIN.—The market is firm, but we have not heard of any inquiry this week. The makers prices range from 74s. to 76s. per cwt., whilst in second hand *German* 1·260 double-distilled glycerin can be bought at 71s. to 72s. per cwt.

GUARANA—Is slow of sale, and offered nominally at 2s. 3d. per lb. on the spot for fair quality.

IPECACUANHA.—We have not heard of any

business in *Rio* (Brazilian) ipecacuanha since our last report, and importers do not seem disposed to give way in price at all. Privately, 4s. 8d. to 4s. 9d. is asked for sound *Carthagena* (Columbian) root, 4s. 6d. per lb. having been bid and refused.

MANNA.—The prices for the new crop of manna which have been expected for the last few weeks have not yet come to hand. It is confidently expected that they will be considerably higher than those of last year, as the yield has been greatly affected by the weather, hence holders of old stock may be expected to stand out for advanced rates.

MENTHOL—Is offering at very low rates for arrival, and prices seem likely to go still lower. Fair quality can be bought at 6s. 6d. per lb., *c.i.f.* terms, for September to October shipment. On the spot the market is practically unchanged, good white *crystals* being still nominally quoted at 9s. per lb.

OIL (COD-LIVER).—The London market remains quiet, with quotations unchanged. Nominally, 175s. to 180s. is the spot quotation for fine 1896 *Lofoten* oil. A parcel of 60 barrels of good quality new *Norwegian* oil will be offered without reserve at next week's drug sales "on account of whom it may concern."

OILS (ESSENTIAL).—*Star anise* is firmer, 8s. having been paid during the week on the spot, and at this price there are further buyers. To-day the market closes very strong, 8s. 3d. having been paid holders' asking price being now 8s. 4½d. per lb. For arrival 7s. 3d., *c.i.f.*, has been paid for August to October, and 6s. 9d., *c.i.f.*, for October to December shipments. *Cassia* oil is firm, there being a good inquiry for oils containing a fairly high percentage of cinnamic aldehyde. During the week 50 per cent oil has sold at 5s. per lb. on the spot, whilst for arrival 50 to 55 per cent. oil is quoted at 4s. 10½d., *c.i.f.*, and 70 to 75 per cent. at 7s., *c.i.f.* American *Peppermint* oils continue to offer very cheaply, *H. G. Hotchkiss'* brand being now quoted at 7s. 6d. without leading to business, whilst *Wayne County* is offered at 5s. 6d. Japan *Peppermint* oil, of 40 per cent. menthol strength, is in very poor supply at present, whilst *dementholised* quotes at 3s. 9d. to 4s. per lb. *Lemongrass* offers cheaply at 2d. per oz. on the spot, whilst for delivery 1⅝d. per oz., *c.i.f.*, September shipment, is quoted. For *Citronella* oil in cases 1s. 4d. per lb. has been paid during the week, whilst for delivery 11d. per lb., *c.i.f.* terms, is quoted.

OILS (FIXED) AND SPIRITS.—*Cotton* is quiet but steady at unchanged rates, *refined* oil being still quoted at £15 10s. to £16 10s. on the spot, according to brand and package. *Coco-nut* is very firm, *Ceylon* being 10s. dearer at £23 10s., and *Cochin* unchanged at £26 10s. on the spot. *Linseed* is steady on the spot, but dull of sale for forward delivery. Oil in barrels is still worth £16 12s. 6d. *Palm* is 10s. dearer, *Lagos* being quoted at £21 10s. on the spot. *Olive* is unchanged at £29 for both *Spanish* and *Levant*. *Rape* is firm at unaltered rates, *refined* oil being quoted at £25 10s. to £26 on the spot. *Turpentine* is firm, *American* spirit being quoted at 18s. 6d. on the spot. *Petroleum* is a firm market at advanced rates, *Russian* being quoted at 5⅛d. to 5⅜d., *American* at 5½d. to 5⅝d., and *water-white* at 6⅝d. to 6¾d. per gallon on the spot.

OPIUM.—The London market is very flat for all varieties of *Turkish* opium. The current quotations are as follows:—*Constantinople*, 9s. to 9s. 9d.; *druggists' seconds*, 8s. 6d. to 9s. 3d.; *Smyrna*, 9s. 6d. to 10s. 6d.; *Soft shipping*, 11s. 6d. to 13s. 6d. per lb. *Persian* opium is firm at steady rates, a moderate business having been done in medium grades at 10s. to 10s. 6d. per lb. Fine quality is quoted at 11s. to 11s. 6d.

ORRIS ROOT.—It is said that the prices of the new crop of root may be expected to be considerably higher, owing to climatic influences. Until recently there was a fair amount of good *Florentine* root, 1895 crop, to be had at 65s. per cwt., but the spot value is now 70s.

PERU (BALSAM)—Is extremely quiet. It is said that a small business has been done privately in genuine quality at 7s. 9d. per lb.

PILOCARPINE SALTS.—Since our last report, the two *German* makers of these alkaloids have lowered their quotations for *nitrate* and *hydrochlorate*, making the current rates 3s. 3d. per gramme for quantities of not less than 100 grammes, and 3s. 9d. for smaller quantities.

POPPY HEADS.—Good *Belgian* poppy heads of the new crop are now quoted at advanced rates, 13s. per thousand being asked, whilst 7s. 6d. is quoted for small sizes.

POTASH COMPOUNDS.—*Chlorate* is rather easier at 4¾d. per lb. on the spot. *Bichromate* is strong at 4¾d. per lb. *Prussiate* is unchanged, *English* being quoted at 7d., and *Beckton* at 6½d. per lb. *Cyanide* is steady at 1s. 5d. per lb. for 98 per cent. *Permanganate* continues very firmly held, 85s. being asked for small *crystals*.

QUICKSILVER.—The market is firm at unchanged rates. Importers still quote £6 10s. per bottle, whilst in second hand it can be bought at £6 9s. to £6 9s. 6d.

QUININE.—Decidedly firmer since our last report. A fair amount of business has been done in the best *German* brands at advanced rates, 10⅞d. followed by 11d. per oz. having been paid. The second hand stock is said to be of only moderate dimensions. The *English* and *German* makers have not changed their quotations, which remain as reported a fortnight ago.

RESORCIN.—The expected rise in the price of this article, caused by the high price of material, has taken place this week, and 6s. per lb. is now quoted for 1-cwt. quantities, and 6s. 6d. for smaller wholesale lots.

SAFFRON.—The market is firm at unchanged rates, the quotations for *Valencia* saffron ranging from 31s. 6d. for fine, 28s. 3d. for seconds, and 27s. 3d. for thirds, whilst *Alicante* quotes at 18s. 6d. per lb.

SHELLAC.—The market is flat. At the weekly sales an unusually large supply was offered, but little inquiry was shown, and the prices paid showed a decline of 2s. to 3s. for *TN Orange*; the latter being the closing price. The following were the quotations:—Good to fine *Orange*. Good pale free *B* was bought in at 105s., and fine pale *AA* in circle at 98s. *TN Orange* sold at 76s. for ordinary red free; 75s. 6d. for fair cakey; ditto cakey and blocky, 75s. to 75s. 6d., and 73s. for dark-red part block. *Garnet* sold at 81s. for fairly free *AC*. *Button* was all bought in. Since the sales there has been some inquiry for *Second Orange*, but there have been no sales at the low auction rates. For delivery *TN Orange* has sold at 79s. per cwt. *c.i.f.* for September shipment.

SOY.—The market is quiet, fair *China* being offered at 10d. to 10½d. per gallon on the spot.

SPICES (VARIOUS).—*Cloves* are slow of sale, only a few bales of *Zanzibar* being sold in auction for 1⅝d. per lb. Good picked *Penang* was bought in at 8½d. per lb. *Nutmegs* are in good demand. The greater part of the *Penang* variety sold at full rates to a further advance of 1d., 3s. 1d. being paid for 62's, 2s. 11d. for 66's, 1s. 10d. for 78's, 1s. 7d. for 90's, and 9d. to 9½d. for 118's, partly shrivelled. *West Indian* sold at 1s. 6d. for 91's, 11½d. for 128's, and 8½d. for 75's and 77's in shells. *Mace* is dull of sale, only 4 cases of *Penang* being sold, mostly without reserve, at 1s. 6d. for good pale and red, part wormy, and 1s. 10d. for bold wormy. *West Indian* sold at 1s. 2d., and pickings at 1s. per lb. *Cinnamon*: Quillings sold at 8d. to 8½d. and broken quill at 10d. per lb. *Cassia Lignea* is firmly held at 34s. 6d. to 35s. per cwt. *Pimento* is quiet, the whole of the catalogue being bought in at 2¾d. per lb. *Capsicums* were bought in at 17s. to 20s. for East Indian, and 20s. for ordinary thin red *Japan*. *Pepper* was in small supply. *Penang* was bought in at 2¾d., and *Tellicherry* at the same figure. Good *Wynaad* part sold at 2¾d., whilst 2⅝d. was paid for *Singapore*. *Arrowroot* sold without reserve at 1⅞d. to 1⅝d., and good grades at 1⅞d. to 2⅝d. per lb. for *St. Vincent*.

STICKLAC—Remains difficult of sale. At the weekly sales fair free sold at 46s. to 47s., and small and dusty at 35s. to 37s. per cwt.

TRAGACANTH (GUM).—The market is very firm, although owing to the high prices now asked by holders, the amount of business done has not been very large. The chief inquiry has been for "seconds" gum, there having been a good demand for export purposes. The following are the current quotations:—Firsts ("fine pale druggists'"), £14 to £14 15s.; seconds, £12 15s. to £13 10s.; thirds, £11 to £12; fourths, £9 to £10 10s.; and other grades, £8 10s. down to 40s. per cwt.

TURMERIC.—The market remains dull, and only a small business has been done privately in *Bengal* at 6s. 6d. to 7s. per cwt.

WAX (VEGETABLE).—*Japan* wax is quiet but steady, and holders are inclined to ask advanced prices, good pale *squares* being quoted at 40s. on the spot, whilst for arrival 37s. 6d. *c.i.f.* per cwt. is quoted. *Paraffin* is quoted at 1¾d. to 2d. for *crude*, and 2¼d. to 3¾d. for *refined*.

MANCHESTER CHEMICALS AND DRYSALTERIES, September. 8.—The Board of Trade returns just issued are not calculated to reassure those interested in the export trade, although there is every reason to suppose that a fair business is being done on home account. A little is being done in bleaching powder for delivery over next year at £6 7s. 6d. to £6 12s. 6d. In alkalies there does not appear to be any change. Recovered sulphur in bags tends upwards and varies from £4 10s. 6d. to £5. Sulphate of copper is again lower at £16 to £16 10s., best brands delivered here. In sulphate of ammonia, business is reported at a trifle under

£7 11s. 3d., Leith, almost a phenomenally low figure. Chlorate of soda unchanged, but chlorate of potash is a fraction lower. Pitch is dull at 30s. per ton free alongside ship, Manchester docks. Yellow prussiate: best Lancashire make, reduced to 7d. and 7¼d.; foreign, 6¼d. to 6½d. Naphthas about 1d. per gallon lower. Benzoles have had a sharp rise both for prompt and forward. Carbolic acid quiet, especially crystals. Aniline salts, 9¾d.; aniline oil, 10¾d. Epsom salts 65s. per ton bags; glaubers, 23s. to 24s. per ton. Arsenic rather easier at late rates.

Newcastle Chemical Report, September 8.—A shade more doing on this market, but business is much below an average for the time of year. Bleaching powder and caustic soda are a freer movement. Sulphur still scarce. Sulphate of ammonia is quieter again, but other ammonia products firm. Prices are:—Sulphur, £4 15s. Bleaching powder, £6 10s. to £7 10s. according to markets. Soda crystals, 37s. 6d. to 45s. Caustic soda, 77 per cent., £9; 70 per cent., £7 10s. to £7 15s. Soda ash, 48 per cent., £4; 50 per cent., £4 3s. 4d. to £4 5s. Alkali, 48 per cent., £4; 50 per cent., £4 15s.; 52 per cent., £5. Hyposulphate of soda, £6 5s.; 1 cwt. kegs, £7. Sulphate of ammonia, Leith, £7 11s. 3d. Pitch, 31s. to 32s. Benzoles, 90 per cent., 4s. 6d., prompt; October to December, 4s. 3d. Crude carbolic acid, 60 per cent., 2s. 2d. Crude naphtha, 1s. 3d. to 1s. 4d. South Durham salt, 9s. 6d. *f.o b.* Tees.

Liverpool Market Report, September 9.—Canaryseed is somewhat quiet at 26s. to 26s. 6d. per 464 lbs. for Turkish of average quality, spot parcels. Chillies have sold in small amount at 32s. 6d. per cwt. for good Sierra Leone. Beeswax has been quiet, that sold consisting mostly of African, Sierra Leone at £6 2s. 6d. per cwt., and Gambia at £6 10s., with Chilian at £7 7s. 6d. Honey: A little Peruvian brought 17s. per cwt., and 30 barrels Chilian Pile 2 20s. per cwt. Kola nuts are not largely offered; 70 packages of dried have been sold on private terms. Quillaya bark: 4 tons Chilian ex-store changed hands at £13 per ton. Cochineal: Good black grain Teneriffe is firmly held for 1s. 3½d. to 1s. 4d. per lb. Castor oil is steady in tone with a fairly good demand, Calcutta showing a tendency to higher prices: good seconds Calcutta, 3d. to 3¼d. per lb.; Madras, 2½d. to 2⅝d. per lb.; 1st pressure French, 2½d. to 2⅝d.; Belgian, 2½d. Olive oil is in good demand, and good business has been done at full prices: Malaga, £29 10s. to £30 per tun; Seville, £28 to £29; Candia, £30 to £31; and Syrian oils, £27 to £28. Linseed oil is unchanged from last week, viz.: 17s. 3d. to 19s. per cwt. for Liverpool pressed. Cottonseed oil: No change to report. Spirits of turpentine, 19s. 3d. to 19s. 6d. per cwt. Petroleum: Russian, 5½d. per gallon; American, 6¼d. to 7½d. Sal ammoniac, £37 per ton, £35 "seconds"; sulphate of ammonia: £7 16s. 3d. per ton. Bleaching powder: £7 per ton. Copperas: Lancashire, 38s. per ton; Welsh, 36s. Sulphate of copper: £16 5s. per ton. Potashes: 20s. to 20s. 3d. per cwt. Pearlash: 35s. per cwt. Cream of tartar is inactive at 92s. 6d. per cwt. for finest white on the spot. Chlorate of potash steady at 4½d. per lb. Prussiate of potash 7¼d. per lb.

PHARMACEUTICAL SOCIETY OF IRELAND.

The monthly meeting of the Council was held on Wednesday, the 2nd instant, at 67, Lower Mount Street, Dublin, at 3 o'clock: The President, Mr. W. G. Wells, Junr., was in the chair, and there were also present Messrs. Downes (Vice-President), Hayes, Murray (Clones), Turkington (Cookstown), Charles Evans, Conyngham, Kelly, Bernard, Professor Tichborne, and Beggs (Treasurer).

The President reported that he, with Messrs. Conyngham, Kelly, and Beggs as delegates of the Council, and Dr. Walsh, Messrs. Payne, Geyler, McKnight, and two other members of the Society, attended the recent Pharmaceutical Conference, which, he said, was a thorough success in every respect. He (President) and other members of the Conference had the honour of being received by the "Grand Old Man." An invitation had been given to the Conference to come to Belfast the year after. It was nineteen years since it had visited Dublin, and perhaps they might look forward to receiving it soon again.

Mr. Turkington moved a resolution to the effect that a notice should be sent to all registered persons keeping open shop for the sale of poisons requiring them to keep the poisons in glass cases under lock and key, and that unqualified assistants and apprentices should be warned that they are liable to a £5 penalty if they sell poisons.

The motion was not seconded, but the President said he could not put it, as they could not enforce the first part of it. Other business having been disposed of,

The Council adjourned.

MISCELLANEOUS NEWS.

The Battle of the Contracts is being waged in Birr with great vigour. Mr. H. V. Goldon, L.P.S.I., in a long letter to the guardians, which came before that body last Saturday, challenges the conclusions come to by the Local Government Board on the report of their inspector, who, he considers, has not treated him fairly. He shows that although higher than other competing Irish drug houses, his prices are less than other wholesale prices that have been charged.

Some of the Prices charged by competing contractors are startling:—Carbolic acid, 2d. per lb.; belladonna plaster, 2d. per lb.; Epsom salts, 4d. per cwt.; cod-liver oil, 2d. per gallon; compound kino powder, 2d. per lb.! The Guardians appear disposed to take Mr. Goldon's part.

Carbolic Acid, self-administered, having caused the death of Eleanor L'Estrange, aged 20, at 41, Moore Park Road, Fulham, on Saturday, September 5, the Coroner said at the inquest that though at present there was no legal restriction on the sale of carbolic acid, he hoped some stringent restrictions would soon be placed on its sale.

Fire at an Irvine Chemical Works.—On Saturday week shortly after six o'clock, fire was discovered to have broken out in the building at Messrs. Alex. Walker and Company's Chemical Works where the limestone is pulverised. It is of small dimensions, measuring only about 25 feet by 40 feet, and was completely gutted before the fire brigade arrived. The strong south-westerly wind blowing at the time carried the flames away from the leaden chambers close by, where the limestone is permeated with chlorine gas and converted into bleaching powder. This was a most fortunate circumstance, for if any of the leaden tanks had been melted by the flames great volumes of the deadly chlorine gas would have been liberated. There was no fire-plug to which the hose could be attached. Some planks were ripped off a shed adjoining the only part of the works in actual contact, and the fire thus isolated practically burned itself out.

Plymouth, Devonport, Stonehouse and District Chemists' Association.—Last Wednesday evening the Association held a special committee meeting at the Foresters' Hall, The Octagon, Plymouth. Mr. C. J. Park occupied the chair, and there were present Messrs. J. G. Netting, Rendle, J. Cocks, Hunt, A. Breeze, Davie, Kelly, Turney, Bailey, and Westcott. The meeting was convened to consider the following resolution submitted by several Devonport members:—"That the Devonport chemists consider that the President for the ensuing year should be selected from Devonport, and beg to suggest the nominee of the Devonport chemists be accepted by the Committee of the Association." Eleven gentlemen signed the resolution, and the result of a stormy meeting was that its principal promoters did not attempt to put the resolution to the vote. The majority of the chemists were obviously of opinion that Mr. J. Cocks, who has worked very energetically in the interest of the Association as Hon. Sec. since its formation, should be asked to become President. Two or three Devonport chemists, however, think that their town should be paid the compliment, and expressed their convictions in pretty strong language at the meeting. It is, perhaps, a rather good thing for one or two gentlemen interested that the meeting was in committee.

Oxalic Acid in Milk.—The Bristol magistrates last week committed for trial Ethel Neph, 17, domestic servant, on a charge of administering oxalic acid in milk to Miss Clara Barnes, of Cotham Park. Prisoner was given the acid to clean brasses, and warned that it was poison. On August 12 she put aside some milk for Miss Barnes, a lodger, and it was noticed to have a peculiar flavour. The girl, when questioned, confessed "I done it for mischief." In custody she expressed sorrow.

Belladonna Poisoning caused the death of William Chick, fifty-four, of 317, Earlsfield Road, Wandsworth, and at the inquest evidence was given to the effect that Mr. A. H. Dee, chemist and druggist, of Earlsfield Road, had prescribed a mixture and some belladonna liniment for deceased, who had taken the liniment in mistake for the medicine. The Coroner remarked that the chemist had no right to prescribe, and said he would adjourn the inquiry for his attendance.

EXCHANGE—OFFERS AND WANTS.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Books, etc.

Bentley's 'Manual Botany,' latest, as new; Royle's 'Materia Medica,' latest, illustrated; Norris's 'Physiology and Pathology of Blood'; Landois and Stirling's 'Physiology,' 3rd edition; Hanbury's 'Science Papers'; Ince's 'Latin Grammar'; Edmonds' 'Botany.' All best condition.—Dispenser, Dispensary, Highgate, Birmingham.

Henry's 'Mnemonic Rhymes in Pharmacy,' for learning at a glance strength, composition, and mode of preparation of tinctures, ointments, etc., 6d.; 'Extra Pharmacopœia,' 1883, 3s. 6d.—Chemicus, 32, Loampit Vale, Lewisham.

Attfield's 'Chemistry,' 11th edition, 7s. 6d.; Clowes and Coleman's 'Quantitative Analysis,' 3rd edition, 1895, 5s. 6d.; Armstrong's 'Organic Chemistry,' 1890, 1s. 6d.; Wills' 'Non-Metals,' 1s. Post free.—Eugene Henry, Loampit Vale, Lewisham.

Attfield's 'Chemistry,' 13th edition, 8s.; Thorpe's 'Quantitative Analysis,' 8th edition, 2s. 6d.; Bower and Vines' 'Practical Botany,' two parts, 5s. 6d.; Cohen's 'Practical Organic Chemistry,' 1s.; Richter's 'Inorganic Chemistry,' 1890, 4s. Post free.—A. Baxter, 2, Sandport Street, Leith, N.B.

A book of 130 Well-tried Recipes for Chemists and Druggists, comprising well-selected formulæ for general, remedial, veterinary, toilet, and everyday preparations. Post free, 1s. 6d.—Tully, Chemist, Hastings.

OFFERED—(*continued*).

Fine copies, free. Barnes' 'Obstetrics,' illus., two thick vols., pub. 36s., 12s. 6d.; Boag's 'Imperial Lexicon,' two thick vols., well bound, cost £2 unbound, 12s. 6d.—Davis, "Chestnuts," Gordon Hill, Enfield.

Ten volumes, clean, never been used, of Dr. Maclaren's 'Atlas of Venereal Diseases,' illustrated paintings of varied lesions, with their treatment, £1 10s., cost £3.—Henry Schofield, 44, Irwell Terrace, Cloughfold, Rossendale.

Pharmaceutical Journal from commencement in 1842, with all portraits, 15 vols., half-calf, 21s. Wanted Gray's 'Supplement to the Pharmacopœia,' any edition. State price free.—Davis, Oldham's, 8, Cornhill, Wisbech.

Miscellaneous.

One large Carboy, pear-shaped stopper; 2 large specie jars; one outside lamp, with iron bracket, for sale.—Trickey, Chemist, Eastbourne.

For Sale. Splendid Chemist's Fittings, including drawers (228), about 24 ft. run; Counter, 20 ft. 10 in.; Handsome Wall Case, 15 ft. 7 in. long, 8 ft. 5½ in. high; Counter Case, etc.—Wilson, Lenton, Nottingham.

Complete Stock and Fixtures of chemist's shop for sale, price £75, worth double.—Heath Bros., Manchester.

For immediate sale, 1½ lbs. finest essence bergamot; what offers?—William Fulleylove, Netherton, Dudley.

OFFERED—(*continued*).

Southall's Materia Medica Cabinet, specimens in perfect condition, 20s.; small Microscope on brass stand in mahogany case, 10s.; Postal Lectures for the Minor, 7s. 6d.; Balfour's 'Botany,' 7s. 6d.; Sundry Books and Laboratory Requisites, cheap.—Spinks, Chemist, Westminster Road, Liverpool.

Fixtures, fittings, bottles, stock, and utensils in trade; premises coming down for parish improvements; must be sold immediately; any reasonable offer accepted.—Apply on the premises, 104, Heath Street, Hampstead, N.W.

Sixteen ft. range (3 nests), drawers, lockers, shelving, another 5 ft., 18 ft. counter, side counter, dispensing screen, carboys, desk, bent glass case, 300 bottles; bargain.—5, London Road, Twickenham.

WANTED.

Wanted.—Glass Counter Case, with raised back sponge case; oil cistern, about 50 gallons. Send full particulars to—Blount, Chemist, Fenham Road, Newcastle-on-Tyne.

Wanted.—4 vols. 'Pharmaceutical Journal,' from July, 1874, to June, 1878, in good condition. State price and particulars of binding, if any.—Ferrall, 67, Lower Mount Street, Dublin.

NEWS IN BRIEF.

THE ANNUAL BOWLING MATCH between chemists representing South Side and West End of Glasgow took place on Thursday afternoon, September 3, on Titwood Green. After a keenly contested and most enjoyable game the West Enders were victorious by seven shots. The rinks were as follows:—

WEST END.	
George Robertson.....	Partick.
W. T. Law	—
J. McNicol	—
W. L. Currie (skip)	Hillhead.
	23 shots.
SOUTH SIDE.	
John Fenwick	Wellcroft.
James Dickie	Queen's Park.
Hugh Lambie.....	Titwood.
James Moir (skip).....	Queen's Park.
	16 shots.

MESSRS. T. AND H. SMITH AND CO., of Edinburgh, have suffered several hundred pounds' damage, occasioned by a fire at their chemical works in Lower Broughton Road on the 7th inst.

MR. DAVID REID, chemist and druggist, of Queen Street, Exeter, while staying at Bournemouth lost a mackintosh, value £2. It was found at a second-hand clothes dealer's, and Edward Hyne, a well-dressed young man, charged at the Bournemouth Police Court with stealing it, was sentenced to six weeks' hard labour, and another six weeks for stealing a bicycle.

CARBOLIC ACID, taken in mistake for medicine, caused the death of Evan Price, paperhanger, of Canning Town, on September 3.

MR. JOHN BROOKS, J.P., chemist and druggist, of Broadway, East Ham, E., performed the ceremony of opening the new Board school in Sandringham Road, Red Post Lane, East Ham, on Thursday, September 3.

MR. W. G. GOLDFINCH, director of C.A.M.W.A.L., should have been mentioned in the report on page 211 of last week's issue as being amongst those present at the Chemists' Exhibition.

MESSRS. BRADY AND MARTIN were awarded a silver medal at the Sanitary Congress, Newcastle-on-Tyne, for their vacuum tube for Röntgen photography; a bronze medal for apparatus for demonstrating the phenomena of light, heat and sound, and a bronze medal for their meteorological apparatus. Brady and Martin have so far improved their Röntgen tubes as to be able to see all the bones of the body with wonderful ease.

MESSRS. BURROUGHS, WELLCOME, AND CO. received the highest reward at the recent Newcastle Sanitary Congress, for their soloids of disinfectants (silver medal), and for their improved syringe for injecting antitoxic serums (bronze medal).

ARSENICAL WEED-KILLER FOR BEER.—The young daughter of an N.C.O. at Newry Barracks died on Friday night from drinking weed-killer, which, owing to being kept in a barrel with a tin pannikin beside it, she and a companion mistook it for beer. She lingered for five hours; her companion is recovering.

MESSRS. AYRTON AND SAUNDERS' chemical manufactory in Duke Street, Liverpool, was the scene of considerable excitement on Thursday, September 3. A quantity of ammonia was upset in a top room where twenty girls were employed. The fumes filled the room, and the girls, fearing an explosion or other disastrous effect, climbed through a skylight on to the roof. The fire brigade was summoned to the scene, and rescued the girls from their perilous position.

WINE AND SPIRIT LICENCES were granted at the annual Licensing Sessions for the borough of Newark, to Mr. John Henry Smith, pharmaceutical chemist, of 9, Bridge Street, Newark, and to Mr. George W. Cherrington, pharmaceutical chemist, of 5, Newark Place.

LATE ADVERTISEMENTS.

Business for Disposal.

OLD-ESTABLISHED Chemist's BUSINESS, well situate, within 5 minutes of Hyde Park and Kensington Gardens. Good house in wealthy district. In occupation of present tenant 14 years. Has been established 50 years. Apply to CHEMIST, 26, Sussex Gdns., W.

Assistant Wanted.

AT once, in fashionable suburb. A first-class COUNTERMAN wanted, in-doors. Also a JUNIOR well up in dispensing. Both experienced in high-class store trade preferred. Liberal terms to suitable hands seeking permanency. Apply, stating fullest particulars and enclosing photo, to F., care of Messrs. Hodgkinson & Co., 101, Whitecross St., E.C.

MARKET REPORT.

[*Specially compiled for the Pharmaceutical Journal.*]

[*The quotations here given are in all cases the lowest net cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.*]

LONDON, SEPTEMBER 17, 1896.

Business has been very quiet this week, and alterations have been for the most part on the down line. In the chemical market carbolic acid is quiet, citric and tartaric acids are easier, whilst cream of tartar is very flat. Amongst the fine chemicals, glycerin is flat, camphor is quite neglected, whilst menthol is still neglected, and quinine is steady. At the fortnightly drug sales, when almost a record was established in regard to the small size of the catalogue, the new crop of senna leaves was largely offered, and sold at fully steady rates. Cascarilla bark sold at a decline. Cardamoms were dearer, whilst gum benzoin, although in but small supply, fetched good prices. Beeswax and Cape aloes were fairly steady. In the essential oil market a good business has been done in star anise oil at advanced rates. Full details of the various articles of interest will be found below:—

ACACIA (GUM).—The market is very flat, and business privately has been on a very limited scale. At to-day's sales fifty-four packages were offered, a fair proportion of which consisted of *Trieste* gum. This variety, however, was all bought in, fine bold pale picked at £10 10s., and palish grain at £7 to £7 10s. per cwt. The only lot sold was twenty bales of bold clean ambery *Aden* sorts, for which 57s. 6d. per cwt. was paid. The supply of *Persian* gum is at present only small, and high prices are asked. The current quotations are as follows:—Fine picked, 20s. to 22s.; good sorts, 15s. to 16s.; ordinary sorts, 13s. to 14s.; reddish picked, 16s.; down to 8s. for block.

ACID CITRIC.—Easier. The spot quotation is now 1s. 2d. to 1s. 2¼d. per lb., according to position.

ACID (TARTARIC).—The market is easier, *English* brands of acid in makers' hands being quoted at 1s. 2½d., whilst *foreign* makes are offered at 1s. 1¼d. to 1s. 1½d. for both *powder* and *crystal*.

ALOES—Were only represented at the drug sales by a parcel of 37 cases of *Cape* aloes, the majority of which was bought in; good bright hard at 23s. per cwt. For five cases offered of fair seconds, rather drossy, 20s. was paid, whilst soft ordinary quality sold at 17s. 6d. per cwt.

AMMONIACUM (GUM).—Very firmly held, but there is no disposition to pay the prices asked. Good small pale drop gum was bought in to-day at 60s. per cwt.

ASAFŒTIDA (GUM).—There has been a fair inquiry for medium qualities, but the market is very firm, and little business has been done. Quotations still range from 70s. for good almondy block, down to 30s. for ordinary lump.

BUCHU LEAVES—In small supply. Four bales of greenish and yellowish leaves were bought in at to-day's sales at 3d. per lb.

BENZOIN (GUM).—At the drug sales, fifty-nine cases were offered, all of which were bought in; good, evenly-packed almondy seconds, at £8 10s., and fair ditto, rather false packed, at £7 10s. per cwt. *Penang* gum was bought in at 95s. for fair glassy almondy seconds, a bid of 87s. 6d. being refused, whilst good almondy *Palembang* seconds, in cases, was also taken out at 47s. 6d. per cwt. The only parcel sold was seven cases of very fine almondy *Sumatra* seconds, for which £9 10s. to £9 12s. 6d. was paid.

CALUMBA ROOT.—Very firmly held. At to-day's sales 72 bales of fair sorts were bought in at 21s. to 22s. per cwt.

CASCARA SAGRADA.—Very slow of sale. Twenty-eight bags of fair quill from San Francisco were bought in at 19s. per cwt.

CASSIA FISTULA.—Forty-three bales of fair pods from Calcutta were bought in to-day at 15s. per cwt.

CASCARILLA.—Sold in auction at a considerable decline. Forty-three bales were offered, all of which sold, 35s. being paid for fair greyish, rather stringy; 23s. to 24s. for medium ditto, and 23s. for small brown bark. These prices show a decline of 2s. to 4s. per cwt.

CANADA (BALSAM).—Two barrels of good quality balsam were bought in to-day at 1s. per lb.

CARDAMONS—Were in small supply to-day, the stock being very small and recent arrivals only small. For the seven cases of *Ceylon-Mysore* offered, a good demand was shown, the prices paid showing an advance of 1d. per lb. on the last sale rates. For good palish plump 2s. 10d. to 2s. 11d. was paid, whilst medium ditto realised 2s. 8d., and fair yellowish part split 1s. 10d. to 2s. 5d. per lb. No *seed* was offered.

CHAMOMILES.—Best new *Belgian* flowers are quoted at 65s. to 67s. 6d., whilst seconds are worth 53s. to 55s. per cwt. At the drug sales twenty bales of fair open *Belgian* flowers, 1895 crop, were held for 42s. 6d. per cwt., a bid of 35s. being refused.

CINCHONA.—The supply offered at the monthly sales held on Tuesday last was about identical with that offered on the previous occasion, amounting to 1288 packages. There was an excellent demand, and practically all was sold at fully steady rates, the average unit remaining unchanged, however, at ½d. to ⅝d. per lb. The following prices were paid: — *Ceylon. Succirubra* stem chips, 1⅛d. to 1½d.; quill, (fair to good short "druggist's") 3¾d. to 5d.; renewed chips and shavings, 1⅜d. to 1¾d. *Officianalis*: Chips and shavings, 1⅞d. to 1½d.; root, 1½d. to 2d.; renewed chips and shavings, 2⅜d. to 2¾d. *Ledger*: Natural stem chips, fair to good rich, 2d. to 4⅛d.; renewed ditto, 2¾d. to 3⅜d.; branch and twig, 1⅝d. to 2⅜d. *East Indian. —Succirubra*: Renewed chips, 1½d.; fair root, 1⅝d. *Officinalis*: Chips and shavings, 1⅝d. to 2d.; root, 2½d. to 2¾d.; renewed chips and shavings, 1⅝d. to 2d. per lb. *Java. — Ledger*: Stem chips, 1⅜d. to 1⅝d. branch, 2⅜d. to 2¾d. *South American*: Soft chips, ⅝d. *African*: Fair to good quill, 2¼d. to 2½d. per lb. At to-day's drug sales a parcel of *Crown* bark was offered, all of which sold at 10½d. to 11½d. for sound down to 8½d. for small, part damaged. In addition, flat *Calisaya* bark was bought in at 8d. to 1s., and *Carthagena* at 7d. per lb.

COCCULUS INDICUS.—There is a good enquiry for this article privately, and advanced prices have been paid, there having been a fair business done at 7s. 9d. to 8s. per cwt. Holders now ask higher prices.

COLOCYNTH.—The market is firm. Privately 2s. 9d. continues to be paid for good *Turkey* apple, whilst *Spanish* is quoted at 1s. to 1s. 2d. for fair quality. To-day ten cases of *Turkey* were bought in at 3s., and sixteen of *Spanish* at 1s. 3d. per lb.

CREAM OF TARTAR—Is offering again at easier rates on the spot, best white *French crystals* being quoted at 85s. to 86s., and *German* brands of *powder* at 87s. to 88s. per cwt.

CUBEBS sold cheaply. Out of 64 bags offered in auction 54 sold at 25s. to 26s. per cwt. for fair stalky and greyish *Singapore* berries. The rest were bought in at 34s. per cwt.

DRAGON'S BLOOD.—Only eleven cases were offered. Of these one sold at £9 10s. for good bright, lump, whilst the rest, was bought in at £6 to £8 10s. per cwt.

ERGOT OF RYE.—The market is steady, but sales are only made when offered without reserve. At the auctions thirty-nine bags were offered, of which sixteen of very wormy old *Spanish* ergot sold without reserve at 3d. to 3¼d. per lb., whilst 4¼d. was paid for sound *Russian*. These prices show no alteration in the market.

GALLS.—The market for *China* galls is firmer, a fair business having being done on the spot at prices which have not transpired. The current quotation is now 55s. to 56s. per cwt. *Persian* galls are very quiet, the small amount of business doing being restricted to *blues*. The current quotations are as follows:—*Blues*, 50s. to 52s.; *greens*, 42s. to 45s.; *sorts*, 48s., and *whites*, 38s. to 43s. per cwt.

GAMBOGE.—Thirteen cases were offered, all of which were bought in at £8 15s. for mixed block and pipe partly run, but of good clean fracture.

GINGER —The market for *Cochin* root is still dull. At the weekly sales only a moderate amount of the rough kinds sold, 29s. being paid for small to medium rough part lean, and 22s. for lean small and ends, whilst washed root was bought in at 31s. to 32s. per cwt. Cut kinds were for the most part bought in, medium limed part cut at 45s. to 50s., up to 62s. for *B*, but 38s. was paid for small dull part cut, and 56s. for bold chiefly cut. *Japan* root was bought in at 16s. 6d., whilst common dark *Jamaican* root sold at 74s. 6d. per cwt.

GUAIACUM (GUM).—Twenty cases were offered, and all bought in; ordinary block at 1s., and low drossy pickings at 4d. to 6d. per lb.

HONEY—Was in small supply to-day, and no good quality was shown. For fair palish *Jamaican* 22s. was paid, whilst dark foul in tins sold at 17s. per cwt. Sixteen barrels of palish *Chilian* honey were bought in at 22s. 6d. per cwt.

IPECACUANHA.—No *Rio* (Brazilian) root was offered at the sales. Five bags of *Carthagena* (Columbian) were bought in at 5s. per lb. after 4s. had been bid and refused for a portion. Privately good quality root is held for 4s. 8d. per lb. A parcel of *Rio* root was on show in the warehouses on Wednesday, which was not offered in sale. For this the holder asks 5s. 8d. to 5s. 10d. per lb., according to quality. The greater part of it is thin, but sound quality root.

JALAP.—Forty-six bags of *Vera Cruz* root were offered in auction, and bought in at 6½d. to 7½d. for fair quality.

KAMALA.—Five cases from Bombay were offered in auction to-day and bought in, 5½d. per lb. being refused.

KOLA NUTS.—Slow of sale. The only parcel sold to-day was a half-barrel of boldish *Grenada* nuts of fair quality, for which 4¾d. was paid. Other qualities were bought in at 10d. for good bold, and 6d. for fair split.

LIME JUICE.—At the spice sales 5 puncheons of *Jamaican* juice sold without reserve at 8d. per gallon, whilst 6½d. was paid for *Dominican*.

MUSK.—Seven caddies of *Tonquin* musk were offered at to-day's sales, but none changed hands. Medium broken blue skin and under-skin (pile i.) was bought in at 75s., and pile iii. at 42s. 6d. per oz.

MYRRH (GUM).—A good supply, amounting to over 100 packages, was offered to-day. Sales were only made with difficulty, 2 cases being all that changed hands, good hand-picked gum from Aden selling at 85s. per cwt. Fair sorts were bought in at 65s., and chips at 50s. per cwt.

NUX VOMICA—Sold to-day at good prices, 4s. 3d. per cwt. being paid for 67 bags of small fairish *Calcutta* nuts, part damaged.

OILS (CASTOR).—*Italian* oil is firm and quoted at 31s. per cwt. *c.i.f.* terms for best tasteless quality. At the drug sales several parcels of *Calcutta* oil were offered, and 2¾d. was paid for 10 cases of fair seconds, whilst good pale firsts were bought in at 3¼d. per lb.

OIL (COD-LIVER).—At to-day's drug sales 60 barrels of good quality new season's *Norwegian* oil were offered without reserve. They all sold at 170s. to 175s. per barrel of 25 gallons.

OILS (ESSENTIAL).—*Star Anise* oil is a very firm market at a considerable advance in price. Closing last week with buyers at 8s. 3d., intermediate rates have been paid on the spot, until to-day there are sellers at 9s. 6d., and buyers at 9s. 3d., the latter figure having been paid for considerable quantities. For arrival the market is correspondingly firmer, 6s. 10d., *c.i.f.*, having been paid for October–December shipment, whilst there are buyers of August to September shipment at 7s. 9d. per lb., *c.i.f.* terms. At the drug sales five cases were bought in at 9s. 8d. per lb. *Cassia*: Steady. On the spot 7s. has been paid for oil of 65 per cent. aldehydic strength. *Peppermint* oils generally are flat. At to-day's drug sales three cases of *Eucalyptus* oil ("Platypus" brand) were bought in at 2s. 3d. per lb.

ORANGE PEEL.—Thirty-five cases were offered in auction, when 6½d. to 7d. per lb. was paid for four cases of fair quality thin-cut *Maltese* peel and 1½d. for five cases of low damaged peel offered without reserve.

PERU (BALSAM)—Very slow of sale. Three cases of genuine balsam of direct import from La Libertad were offered in auction and bought in at 7s. 10d. per lb.

QUILLAIA.—Fifteen shillings per cwt. was the price asked at to-day's sales for fifty bales of good quality bark. They were bought in at 20s.

QUININE SULPHATE.—There has been a small business doing in *B and S* and *Brunswick* at 11d. per oz. The market is steady

RHUBARB. — Sixty-three chests were offered in auction, of which twenty-seven sold at the following rates:—*Canton*: Medium to bold round, pinky fracture, 1s. 1d.; medium ditto, fair fracture, 10d. per lb. *Shensi*: Good small round, 2s. 2d.; medium rough flat, 1s. 5d.; very rough bold flat, 1s.; rough pickings, 10d. *High dried*: Bold flat, slightly wormy, 9d.; medium round ditto, 8d.; and dull medium flat (without reserve), 7½d. per lb.

SAFFRON.—The market is steady at unchanged rates from those last reported. To-day twenty-eight tins of *Valencia* saffron were bought in at 21s. to 22s. 6d. per cwt.

SARSAPARILLA.—Fourteen packages were catalogued to-day. Of these six bales of *Jamaican* had been sold prior to the sales. Mixed red ditto sold at 1s. 3d. and low grey at 9½d. to 10d. per lb. *Lima Jamaican* root was held 1s. 2d. per lb.

SEEDS (VARIOUS).—Several lots of *seeds* were offered to-day, but nearly all were bought in as follows:—Maltese *Cumin* seed, 35s. to 38s. per cwt. *Fennel*, from Koenigsburg, at 17s. per cwt. Kombé *Strophanthus* seed at 3s. 6d. per lb. Ten bags of *Syrian* aniseed sold at 21s. per cwt.

SHELLAC. — The market is decidedly firmer and a fair business has been done at higher prices. On the spot 80s. to 81s. has been paid for *TN Orange*, whilst *Garnet* has sold at 82s. for cakey and 82s. for fair free For arrival a good business has been done in *TN Orange*, October to January shipment at 75s. 6d. to 76s. *c.i.f.*, and holders now ask higher rates. At the weekly sales a moderate supply only was offered, which met with a good demand at prices which showed a somewhat irregular but on the whole firmer market, the prices paid for *Second orange* showing an advance of 2s. to 3s. on the last sale prices, 80s. to 81s. being paid for fair *TN*. No *Garnet* was offered, whilst *Button* sold at steady rates. The following prices were paid:—*Second orange*: Fair bright *TN*, 83s.; fair bright curly to dull red strong, 78s. to 80s.; dark curly to fair cakey and blocky, 75s. to 76s.; livery, 73s. to 74s. Damaged *TN* sold at 66s. to 70s., and *AA* in circle at 77s. to 82s. *Button* sold without reserve at 65s. for blocky circle 2's.

SENNA.—A good supply of *Tinevelly* leaves of the new crop was offered at to-day's sales amounting to nearly 650 bales. The bidding for these was somewhat irregular, at the outset the prices paid being decidedly easier, but later on they firmed up and closed very steady. The quotations are as follows:—Medium to good bold green leaves 3½d. to 4½d.; small to medium green, 2¾d. to 3¾d.; small to medium dull part brownish, 2d. down to ¾d. per lb. *Pods* sold at 1½d. to 2d. per lb for good quality. Good *Alexandrian* leaves were bought in at 1s. per lb.

SOY.—Nearly 250 casks of *China* soy were offered to-day, the majority without reserve. Of these 208 sold at 9¼d. to 10¼d. per gallon, according to quality.

SPICES (VARIOUS).—*Cloves* were in small supply and very dull of sale, fine *Zanzibar* being bought in at 2¾d. A few cases of good picked *Penang* sold at 9d. per lb. *Mace* is quiet, and all the *Penang* was bought in, pickings at 1s. 2d., and ordinary to medium at 1s. 4d. to 1s. 6d. per lb. A few packages of *West Indian* sold at prices ranging from 2s. for fine bright pale down to 1s. for pickings. *Nutmegs*: In good demand, and selling at steady rates, 3s. 2d. being paid for 62's down to 5½d. for wormy pickings. *Singapore* sold without reserve at 1s. 8d. for 80's down to 6d. for wormy, whilst *West Indian* realised 2s. 8d. for 62's down to 6½d. for part shrivelled 144's. *Cinnamon chips* were bought in at 3½d. for ordinary *Ceylon*. *Cassia lignea* is quiet, though steady, at the rate of 35s. per cwt. *Pimento* is flat, but the market is steady, 2¼d. being paid for medium, and 2¾d. for fair quality. *Capsicums* sold at 21s. to 22s. 6d. for small long red off-stalk *Japan*. *Chillies* were in good demand at firmer rates, fair red *Zanzibar* selling at 43s. to 47s., and fine bold red *Japan* at 51s. to 52s. per cwt. *White Pepper* was in small supply. A parcel of *Singapore* was bought in at 4½d., and extra fine bold ditto at 5¼d. per lb. *Pepper*: *Penang* kind sold at 2½d., whilst *Tellicherry* was bought in at 2½d. per lb. *Arrowroot* was dull of sale, and practically all the *St. Vincent* offered was bought in at 1½d. to 2¾d. per lb., except 5 barrels of *Fancy*, which sold at 2½d.

SQUILLS.—About 50 bags were offered and bought in at to-day's sales fair pale at 3d. and yellowish seconds at 2¼d. to 2½d per lb.

TONQUIN BEANS.—Nine shillings per lb. was the buying-in price of two casks of fine bold *Angostura* beans.

TRAGACANTH (GUM).—There has been a good inquiry during the week for this article, without much business resulting. The demand has been chiefly for the better qualities. The following are the current quotations:—*Firsts* (fine pale "druggists" gum), £14 to £14 15s.; *seconds*, £13 to £13 10s.; *thirds*, £11 to £12; *fourths*, £9 to £10 10s.; yellow and pinky, £7 10s. to £8 10s., down to £2 for lower grades.

TURMERIC—Continues very slow of sale, with *Bengal* quoted nominally at 6s. 6d. to 7s. per cwt. according to quality.

WAX (BEES).—*Jamaican* sold at steady rates £8 to £8 2s. 6d. being paid. All the other varieties were bought in:—*Bombay* at £5 10s.; *Benguela* at £6 10s. and *Cuban* at £6 5s. per cwt.

WAX (JAPAN).—A very firm market at advanced rates, 40s. followed by 42s. 6d. having been paid during the week for good pale *squares* on the spot. Holders are now asking higher prices. For arrival near at hand, 37s. 6d. *c.i.f.* has been paid.

NEWCASTLE CHEMICAL MARKET, September 15.—Little or no new business is

coming forward. Shipments abroad continue below an average for the season. Sulphur alone keeps scarce and firm at quotations. Prices are :—Bleaching powder, according to markets, £6 10s. to £7 10s. Soda crystals: 37s. 6d. to 45s. Caustic soda: 70 per cent., £7 5s. to £7 10s. Soda ash: 52 per cent., £4 2s. 6d. Alkali: 52 per cent., £5. Sulphur: £4 15s. per ton.

MANCHESTER CHEMICALS AND DRYSALTERIES, September 15.—A fairly steady business continues to be reported on home account, but export demand is quiet, as also drysalteries. Prices generally are well maintained. In bleaching powder business is being done over 1895 at £6 5s., but nothing, so far as can be ascertained, has been settled as to soda ash, caustic soda, and heavy chemicals generally. Aniline oil and salt are firm at 10¼d. and 9¾d. respectively. Chlorates both of potash and soda are drooping. Recovered sulphur: Lower at £4 15s. per ton bags. Oxalic acid varies from 3½d. to 3¾d., according to delivery. Yellow prussiate for best local makes is held at 7d. to 7¼d., although foreign has another relapse and is quoted 6¼d. Salt cake is about a shilling per ton lower. Glauber salts: Dull at 23s. to 24s. per ton bags. Epsoms: 65s. Lime salts, owing to large arrivals by ship canal, are weak, although Welsh brown is held at £4 2s. 6d. to £4 5s. Sulphate of copper: £16 per ton for best brands, delivered here, and tending downwards. Sulphate of ammonia: £7 10s. per ton, Leith, a phenomenally low price. Benzoles continue steady. Naphthas present little change. Carbolic: Rather firmer for forward delivery.

LIVERPOOL MARKET REPORT, September 16.—Linseed is quiet in all positions. River Plate early in the week was at 27s. 6d. per 416 lbs., but sales of some 100 bags have since been effected at 27s. on the spot. Canaryseed has been somewhat idle of late and is offering in small quantity at 26s. to 26s. 6d. per 464 lbs. for Turkish, between which prices 600 bags have changed hands. Hempseed: 25 bags of Chilian sold at 27s. per 384 lbs. Pepper: 140 bags sold, black at 2¾d. per lb. and white Siam at 4⅛d. ex-store. Beeswax: The sales have been confined to Sierra Leone at £6 5s. per cwt., and Gambia at £6 10s. Quillaya bark: Chilian was selling at £13 2s. 6d. per ton, but there are no sellers now under £13 5s. Castor oil is in good demand at slightly easier rates than last week's Calcutta, good seconds selling at 3d. to 3⅛d. per lb.; French first pressure and Madras at 2½d.; and Belgian, 2½d. Olive oil still maintains its recent advance, Malaga selling at £29 10s. to £30 per tun; Seville, £28 10s. to £29 10s.; Gallipoli, £31 10s.; and Gioja, £29. Linseed oil is very quiet, Liverpool pressed being at 17s. 3d. to 18s. 6d. per cwt. Cottonseed oil remains at 15s. 6d. to 16s. for Liverpool refined; American, 16s. to 16s. 6d. per cwt. Spirit of turpentine is steadier in tone at 19s. 3d. to 19s. 6d. per cwt. Petroleum oils, both Russian and American, are unchanged in price from last week, viz.: Russian, 5½d. per gallon; American, 6¼d. to 7½d. per gallon. Sal ammoniac: 37s. per cwt. Sulphate of ammonia: £7 15s. per ton. Bleaching powder: £7 per ton. Potashes: 20s. to 20s. 3d. per cwt. Pearlash: 35s. Cream of tartar is quiet at same quotation as last week, 92s. 6d. per cwt. Chlorate of potash: 4¾d. per lb.

MISCELLANEOUS NEWS.

CARBOLIC ACID.—Mr. Luxmore Drew, the coroner who presided over the inquiry held last week at Fulham touching the death of the young girl, Eleanor Mulready, at the close of the proceedings commented on the fact that at present there is no legal restriction upon the sale of carbolic acid, and expressed a hope that before long some stringent restrictions would be placed upon the indiscriminate sale of this virulent poison. A correspondent who drew the attention of the President of the Local Government Board to these remarks, and pointed out that similar views had for years past been strongly expressed by coroners throughout the country, by the Pharmaceutical Society, and the British Medical Association, who had constantly urged the necessity for the inclusion of carbolic acid in the poisons schedule of the Pharmacy Act, has received the following reply: "Privy Council Office, Whitehall, September 15, 1896.—Sir,—With reference to your letter of the 10th inst., addressed to the President of the Local Government Board, and forwarded by that Department to this office, I am directed by the Lords of the Council to state that the question of imposing some restriction on the sale of carbolic acid is under the consideration of their Lordships.—I am, sir, your obedient servant, J. H. HARRISON."

MANUFACTURE OF SODA.—From the last annual report of the chief inspector under the Alkali Works Act, it appears that, for the year 1895, the manufacture of soda by the ammonia process has at length exceeded that made by the Leblanc process. It has been obvious for some years that the newer process would soon take the lead over the historic process of the unfortunate Leblanc, which latter, however, is very far from succumbing altogether. In round figures, whilst 408,000 tons of salt were used in the Leblanc process last year, 428,000 tons were used in the ammonia process, being an increase by this process of nearly 70,000 tons over the year 1894. The competition of the electrical process for the production of alkali is as yet hardly felt, but each year brings us nearer to the commercial solution of the problem upon which so much ingenuity has been bestowed.

LAUDANUM DRINKING EXTRAORDINARY.—A woman named Ellen Rosina Carr, who lives in Grey Rock Street, Liverpool, sent a note to a neighbour's house to the effect that she had taken poison, and had given poison to her son Herbert, six years of age. The woman and child were taken to the Northern Hospital. The medical staff applied remedies so successfully that the two patients were considered out of danger very shortly after their admission to the hospital. Mrs. Carr stated that she had given a pennyworth of laudanum to the boy, and had taken sevenpennyworth herself.

AN OVERDOSE OF LAUDANUM, taken to relieve pain by Isabel Mulliss (69), of Adelaide House, All Saints' Green, caused an inquest to be held with respect to her death. Verdict: "Death by misadventure."

NEWS IN BRIEF.

MISS MAY WELLS, daughter of Mr. W. F. Wells, President of the Pharmaceutical Society of Ireland, is announced as the winner of a valuable prize in music at the local examinations.

MR. GEORGE HOWEL GRINDLEY, second son of Councillor Grindley, M.P.S.I., Dublin, was married on the 9th inst., at Holy Trinity Church, Rathmines, to Miss Mary Louisa Flude, a Bray lady, and a near relative of the late Sir William E. Crosbie.

MR. HARDY, L.P.S.I., Hon. Secretary of the Pharmaceutical Chemists' Assistants' Association, Dublin, had his leg crushed a few days ago by a horse which he was riding dashing him violently against a stone wall. The patient is recovering gradually.

PHARMACEUTICAL SOCIETY OF IRELAND.—The last days for lodging applications for the October examinations will be the following:—Monday, the 21st inst., for the Preliminary examination on the 5th prox.; Monday, the 28th inst., for the Pharmaceutical Assistants' examination on the 12th prox; Tuesday, the 29th inst., for the Registered Druggist examination on the 13th prox.; Wednesday, the 30th inst., for the Pharmaceutical Licence examination on the 14th prox. and following days.

THE CULTIVATION OF IRISH MOUNTAIN BOGS is the latest thing in Hibernian enterprise. A limited liability company is being formed to manufacture from the peat sanitary chest protectors, abdominal belts, veterinary and surgical dressing, disinfecting powder, and other similar articles. The supply of bogs is almost inexhaustible.

THE IRISH PHARMACEUTICAL SOCIETY'S SCHOOLS are to be opened on Thursday, October 1, with a lecture on "The New Photography," by Professor Tichborne.

THE "OLD HOUSE" in Mount Street, Dublin, is wearing quite a cheerful appearance just now, decidedly better for its annual rest. Inside, however, the greatest improvement is manifest, particularly in the chemical laboratory, which has been tastefully decorated, while the bench accommodation has been largely increased.

A COMING OF AGE.—Thursday the 10th inst. was the twenty-first anniversary of the first meeting of the Pharmaceutical Society of Ireland.

HERMENE, LIMITED, is the title of a new company at Dublin, formed for the sale of this medicinal preparation, which is a remedy for cuts, bruises, scalds, etc. At Messrs. Hayes and Son, 12, Grafton Street, is the wholesale depôt.

MR. FREDERICK DAVIS, Principal of the Newington College of Chemistry and Pharmacy, was presented on Friday, September 11, with a beautifully-designed marble clock, resembling the Coliseum, at Rome. The clock was presented on behalf of the past and present students of the College to celebrate the occasion of his marriage on September 13.

EXCHANGE—OFFERS AND WANTS.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Books, etc.

Garrod's 'Materia Medica and Therapeutics,' 1886 edition, good condition, or exchange for Green's 'Manual of Botany,' vols. 1 and 2.—"Botany," 70, Fortune Green Road, W. Hampstead, N.W.

'Year-book of Pharmacy and Transactions of the British Pharmaceutical Conference,' from 1874 to 1892 inclusive, new, offers, no cards.—Spencer, Villetta, Drayton Park, Hanwell, London, W.

Ten volumes, clean, never been used, of Dr. Maclaren's 'Atlas of Venereal Diseases,' illustrated paintings of varied lesions, with their treatment, £1 10s., cost £3.—Henry Schofield, 44, Irwell Terrace, Cloughfold, Rossendale.

Free, as new, Milton's 'Gonorrhœa and Spermatorrhœa,' 2 vols. (16s.), 7s. 6d.; Berkeley Hill's 'Syphilis' (18s.), 7s. 6d.; Sir H. Thompson's 'Diseases Urinary Organs,' 3 vols. (30s.), 7s. 6d.—Davis, "Chestnuts," Gordon Hill, Enfield.

A book of 130 Well-tried Recipes for Chemists and Druggists, comprising well-selected formulæ for general, remedial, veterinary, toilet, and everyday preparations. Post free, 1s. 6d.—Tully, Chemist, Hastings.

OFFERED—(*continued*).

Attfield's 'Chemistry,' 8s.; Ganot's 'Physics,' 7s. 6d.; Muter's 'Materia Medica,' 5s. 6d. Professor Oliver's 'Botany,' 2s. 6d.; P.B., 3s. 6d., all recent editions, first-class condition, accept 25s. the lot.—Payne, 7, Sparsholt Road, N.

Miscellaneous.

Sixteen ft. range (3 nests), drawers, lockers, shelving, another 5 ft., 18 ft. counter, side counter, dispensing screen, desk, carboys, bent glass case, 300 bottles; bargain.—5, London Road, Twickenham.

One cwt. finest crushed linseed, 12s. 6d.; one doz. pill trays, beech, 24×18in., perforated zinc bottoms, splendidly made, 10s. 6d.—C. M. Robinson, chemist, Attleborough.

Hair Curler, like "Frizetta"; Balsam Aniseed, like "Powell's"; Gripe Water, like "Woodward's"; White Embrocation, like "Elliman's." Recipes 1s.; the lot 2s. 6d.; samples 4d.—Chemist, 4, Woronzow Terrace, St. John's Wood.

For immediate disposal, whole or part of first-class chemist's shop fittings and stock; valuation or reasonable offer.—J. E. Ray, Solicitor, Hastings.

WANTED.

Wanted for cash, Cooley's 'Recipes,' Dussance's 'Perfumery' (Philadelphia), Skelton's 'Botany,' Wall's 'Dictionary of Photography,' percolator, lot of handy apparatus for laboratory, and good microscope. Send full details—Chemist, 106, Salcott Road, S.W.

Wanted, complete Minor Materia Medica Cabinet, small microscope, botanical slides, Cripps' 'Pharmacy,' B.P. Addenda, Minor Herbaria. Please state lowest prices.—Geo. Webb, 70, Ivy Street, Southsea, Hants.

Wanted.—4 vols. 'Pharmaceutical Journal,' from July, 1874, to June, 1878, in good condition. State price and particulars of binding, if any.—Ferrall, 67, Lower Mount Street, Dublin.

Wanted.—Microscope suitable for Major work, also books for Major, Green's 'Botany,' etc.; send particulars.—P. K., 1, Blackburn Road, Bolton.

Wanted 'Attfield's Chemistry,' 15th edition; Bentley's 'Botany,' latest edition; Wills' 'Materia Medica' (adapted for the Minor); Wills' 'Elements of Pharmacy;' 'Art of Dispensing.' State lowest price.—Stoneman, Orchard Gardens, Teignmouth.

DR. GEORGE WATT, C.I.E., Reporter on Economic Products in India, avails himself of three months' privilege leave from September 1. Mr. David Hooper, of Ootacamund, acts for him in Calcutta.

MR. H. S. PEARMUND, pharmaceutical chemist, having disposed of the business successfully carried on by him for the last nine years, at Hereford, has purchased the business of Mr. Chabôt, known as "the Kent Drug Stores, Ltd.," 48, High Street, Tunbridge Wells.

CARBOLIC ACID ADMINISTERED TO A BABY, aged four and a half months, produced effects which its parents resented, and the culprit, a domestic servant, named Edith Pearce (17), was charged before the Isle of Wight magistrates on Saturday last. When questioned why she gave the infant poison, the accused replied that she was in a temper at the time. Owing to the critical state of the child the prisoner was remanded.

CONTRAVENTION OF THE DENTISTS ACT at Glasgow led to J. H. Hatfield, 5, Trongate, being fined £5, inasmuch that, not being a legally qualified practitioner, and not being a person registered under the Act, he had displayed at his house the words "surgeon dentist," and other words implying that he was registered under the Act.

TWO THOUSAND FALSE TEETH and a quantity of dental metal having been stolen from Mr. W. Perry, surgeon dentist, of South Parade, White Ladies Road, Bristol, William Lewin, his articled pupil, was charged with the theft, which he admitted, and was sentenced to two months' imprisonment with hard labour. The magistrates were of opinion that the jeweller who had purchased the metal from the youth ought also to be prosecuted.

MR. HARSTON, chemist and druggist, High Street, Lincoln, has been the victim of a fire, but the fire brigade soon extinguished the flames. The damage was not great, and is covered by insurance in the Royal Company.

THE SHEFFIELD PHARMACEUTICAL AND CHEMICAL SOCIETY will hold its annual meeting for the election of officers, etc., on the 23rd inst., and the annual dinner of the Society will take place on October 8.

THE SHEFFIELD SCHOOL OF PHARMACY will also have the new session's work inaugurated on October 8. The following are stated by a local correspondent to be the lecturers for the session:—Chemistry (theoretical and practical), Mr. J. H. Highfield; Materia Medica and Botany, Mr. J. Austen; Assistant Demonstrator, Mr. E. C. Exell; Hon. School Secretary, Mr. S. T. Rhoden. It will be observed that this list is somewhat different from that published in last week's Journal (p. 238), no official intimation of the alterations having then been received.

MR. J. G. NETTING, Vice-President of the Plymouth and District Chemists' Association, has been unanimously elected First Chairman of St. Peter's Ward Liberal Association, Plymouth.

MESSRS. H. AND R. LYONS, pharmacists, Omagh, have been appointed contractors for medicines and surgical appliances to the board of guardians at Omagh.

MESSRS. WYSE AND CO.'S pharmaceutical establishment, North Frederick Street, Dublin, has been acquired by Messrs. Fannin and Co., Limited, surgical instrument makers, Grafton Street, and will be carried on as a high-class dispensing concern in future.

LATE ADVERTISEMENTS.

Business for Disposal.

OLD-ESTABLISHED Chemist's BUSINESS, well situate, within 5 minutes of Hyde Park and Kensington Gardens. Good house in wealthy district. In occupation of present tenant 14 years. Has been established 50 years. Apply to CHEMIST, 26, Sussex Gdns., W.

Assistant Wanted.

AT once, in fashionable suburb, a first-class COUNTERMAN, in-doors. Also a JUNIOR well up in dispensing. Both experienced in high-class store trade preferred. Liberal terms to suitable hands seeking permanency. Apply, stating fullest particulars and enclosing photo, to F., care of Messrs. Hodgkinson & Co., 101, Whitecross St., E.C.

ST. MARY'S HOSPITAL, PADDINGTON, W.

Contract for Drugs, Chemicals, Dressings, &c.

The Board of Management hereby invite Tenders for the supply of Drugs, Chemicals, Dressings, &c., for the 3 months commencing October 15th next.

Tenders must be delivered in sealed envelopes, addressed to the Secretary, and marked on the outside "Tender for Drugs," on or before Monday, 28th September, at noon.

Forms of Tender may be obtained on application to the undersigned.

By order,
THOMAS RYAN, *Secretary.*

MARKET REPORT.

[*Specially compiled for the Pharmaceutical Journal.*]

[*The quotations here given are in all cases the lowest net cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.*]

LONDON, SEPTEMBER 24, 1896.

The produce markets directly and indirectly connected with the drug trade have been very quiet during the week, and the changes which have taken place have been neither many nor important. In the chemical market carbolic acid is unchanged, but a good demand is reported, whilst tartaric and citric acids are quiet. Cream of tartar is firm, whilst copper sulphate is still neglected. Permanganate of potash is still firmly held, whilst cyanide is offering at rather easier rates. Glycerin is said to be offering at rather lower prices, and there seems to be but little demand at present. A rise in quicksilver of 2s. 6d. per bottle was yesterday announced, but the change has not led to any corresponding change in the price of mercurials. Camphor, both the crude and refined varieties, is firm. In drugs there is little to report. The opium market is quiet. Orris root of the old crop is scarce, whilst in regard to the new root it is reported that the weather has been extremely unfavourable to digging operations being carried on. Chamomiles are a very firm market, whilst ipecacuanha has held for high prices, though little business has been done. There is little of interest in the essential oil markets. Shellac is rather easier for arrival, but on the spot closes fairly steady. Full details of the various articles of interest will be found below:—

ACETANILIDE.—There appears to be rather more competition among makers, and whilst 1s. 4d. per lb. remains the market quotation, it would be possible to buy below this figure.

ACID, CARBOLIC.—Prices unchanged, but demand improving; crystals, 34° to 40°, 6d. to 6¼d.; 39° to 40°, 6½d. per lb. Crude, 60°, 1s. 10d.; 75°, 2s. 2d. per gallon.

ACID, CHRYSOPHANIC.—25s. per lb. is the general quotation, but for good quantities makers would take rather less.

ACID, CITRIC—Is weak and tending lower. "Commercial" quality is quoted 1s. 2d. per lb., whilst "B.P." is noted 1s. 2½d. to 1s. 3d. per lb.

ACID, OXALIC.—Unchanged at 3⅝d. per lb. net.

ACID, TARTARIC.—Quiet at 1s. 2½d. per lb. for *English* and 1s. 1¼d. per lb. for *foreign*.

AMMONIA COMPOUNDS.—*Sulphate* quiet. Grey 24 per cent, for prompt delivery, London, £7 12s. 6d.; Hull, £7 10s. to £7 11s. 3d.; Leith, £7 8s. 9d.; Beckton terms, £7 10s. *Sal ammoniac* is unchanged at 37s. per cwt. for *firsts*, *seconds* being 2s. per cwt. less. *Carbonate*: 3d. per lb. in *casks* and 3¼d. per lb. in *jars*.

CAFFEINE—Continues dull, with quotations unchanged at 18s. per lb. for 100-lb. lots to 19s. per lb. for 10-lb. lots of the *pure*, whilst the *citrate* is quoted at 14s. 9d. to 15s. per lb.

CAMPHOR (CRUDE)—The tone of the market for spot is firmer, and nothing is to be had in this position under 125s. per cwt. for *China*, and 135s. for *Japan*. For forward delivery 102s. 6d. to 103s. 6d. per cwt. is asked for *China* for October-November shipment, and 112s. 6d. per cwt. for *Japan*, same position.

CAMPHOR (REFINED).—Refiners continue busy, and prices are very firm at last rates.

CHAMOMILES—Dearer. Crop is reported to be a very short one.

COAL DISTILLATION PRODUCTS.—*Benzole* very firm and dearer: 50 per cent., prompt, 3s. 4d. to 3s. 4½d.; and 90 per cent., 4s. 9d. to 4s. 10½d. per gallon.

COCAINE MUR.—Makers' prices remain unchanged, but a few hundred ounces of good brand in second hands could be bought at a trifle below.

COCHINEAL—Market quiet, and little doing, with arrivals coming to hand more freely. Silver grain is quoted 1s. 4d. to 1s. 6d., and black grain, 1s. 3d. to 1s. 5d. per lb.

COLOCYNTH.—This is a firm market, and 2s. 9d. per lb. is the price for good pale *Turkish* apple, and 2s. 4d. per lb. for small to bold, but slightly discoloured. For *Spanish*, 10d. to 1s. 2d. per lb. is wanted, according to quality.

COPPER SULPHATE.—On the spot quotations rule £15 17s. 6d. to £16 15s. per ton, as to brand.

CREAM OF TARTAR—Is quiet and unchanged, best white *French* crystals, 85s. per cwt.; good white powder. *English* grinding, 87s. per cwt.

ERGOT OF RYE.—For sound *Spanish* 6½d. per lb. is required. Weavily lots can be obtained below this.

GENTIAN ROOT.—Business has been done this week at 18s. 6d. per cwt. *ex* wharf, but it is doubtful if any more could be got at anything like this price. One agent states that he cannot sell below 22s. per cwt. *f.o.b.* French port.

GINGER.—At the sales on Wednesday of 103 cases limed native cut *Cochin*, 83 cases sold at dearer prices; dull small and ends, part cut, 35s. to 36s.; dull medium part cut, 45s.; fine bold, chiefly cut, 75s. 6d. cwt. Of 241 bags limed *Japan*, 61 bags sold at 15s. per cwt. Privately moderate sales of washed rough *Cochin* have been made at 29s. to 30s. per cwt.

GLYCERINE—*Crude* is very strong, but demand for *refined* is quiet, quotations being £73 to £75 per ton, according to brand.

GUARANA—Continues very low in price, which can only be accounted for by a total absence of demand.

IPECACUANHA.—There are some inquiries, but holders are very firm at 6s. 1b. for good *Rio* root.

KOLA NUTS.—Two barrels mouldy *Grenada* in yesterday's sales sold at 4d. to 4¼d. per lb.

MENTHOL—Is quiet on the spot, whilst for shipment prices are slightly dearer at 7s. per lb., *c.i.f.* terms.

MORPHINE AND CODEINE.—No change to report.

OIL (COD-LIVER).—There is much more inquiry, which it is said comes from the Continent, bulk of stock being concentrated here. Quotations for fair to fine *Lofoten* oil run from 160s. to 175s. per barrel, *c.i.f.* terms, according to brand. For *Finmarken* quotation is 150s. per barrel, *c.i.f.*, and for this quality even slightly lower prices might be accepted. Fine *Newfoundland* oil is quoted nominally at 5s. 9d. to 6s. per gallon.

OILS (ESSENTIAL).—*Star aniseed*, very firm, but quiet, 9s. 6d. per lb. asked for spot. August-October shipment, 7s. to 7s. 3d. per lb.; October-December, 6s. 9d. per lb. *c.i.f.* terms. *Cassia*: Steady at last week's rates. *Eucalyptus* is not in large supply, fair quality offering at 1s. 4d. to 1s. 8d. per lb. *Globulus* oils can be had at from 1s. 9d. to 2s. 3d. lb., the latter price being for fine quality. *Lemon* for prompt delivery is held for 4s. lb., but new crop is quoted lower at 3s. 6d. per lb. *c.i.f.* terms for December to January shipment. *Cinnamon*: Good oil scarce and wanted. *HG Hotchkiss Peppermint* oil slightly firmer at 7s. 9d. per lb. for spot.

OILS (FIXED) AND SPIRITS.—*Cocoa-nut*: Sellers are scarce. *Ceylon* on the spot, £23 10s.; afloat, £20 5s. to £20 10s. *Cochin*: Dearer at £27. *Palm*: Firmly held. *Lagos*: £23. *Cotton*: Quiet, spot refined, £15 10s. to £16, according to make and package. *Rape*: Firm at unchanged rates, £25 10s. to £26. *Linseed*: A quiet market, £15 15s. *Turpentine*: A strong market. *American*, on the spot, 19s. 6d.; October to December, 19s. 9d. to 19s. 10½d.; January to April, 20s. 6d. to 20s. 7½d. per cwt.

OPIUM—Quiet, but firm, fair to fine druggists' being quoted 9s. 3d. to 10s. 3d. per lb.

ORRIS ROOT.—The weather in Italy continues very wet, and but little root has been dug so far. It is being offered for later delivery at 58s. 6d. per cwt. *c.i.f.* terms for *Florentine* "sorts," and 62s. 6d. per cwt. same terms for good picked. Old root is scarce on the spot, 70s. per cwt. has been paid for fair *Florentine*, and higher prices are now required. For *Verona* reliable quotations are not to hand.

POTASH COMPOUNDS.—*Chlorate* is quiet on the spot at 4⅜d. per lb. *Prussiate* is lower, *English* being now quoted 6½d. per lb. *Beckton*, 6d. per lb. *Cyanide* is also lower at 1s. 4½d. for 98 per cent. *Permanganate* continues strong for immediate delivery, and it seems probable that if demand continues prices will hardly recede.

QUICKSILVER—Has been strong, and importers have advanced the price to

£6 12s. 6d. per bottl second hands a trifle heaper.

QUININE.—The demand has been slack, and there are now sellers of *German* brands at 10¾d. per oz., with buyers at 10½d. er oz.

SAFFRON.—Prices remain unchanged at 27s. 3d. to 32s. 9d. per lb. for *Valencia*, according to quality.

SCAMMONY RESIN — Is rather easier, makers, in view of lower prices for root, competing more freely. Quotations, 8s. 6d. to 9s. 6d. per lb. as to quantity and make.

SENEGA ROOT—Is dearer at 1s. 1d. to 1s. 2d. per lb. on the spot, according to holder.

SHELLAC.—The public sales this week opened 1s. to 2s. cheaper, but at the close were firm at about last sale's rates. At sale 738 cases were offered, and 611 sold; middling to good bright *TN*, 77s. to 82s. cwt.; ordinary to fair cakey and blocky, 71s. to 76s. per cwt. For arrival, during last week, prices advanced at 74s. to 80s. cwt., but since then the market has become quiet, with sellers at 76s. cwt., *c.i.f.*

SPICES (VARIOUS).—*Cloves*: At auction 132 bales *Zanzibar* bought in; of 45 cases picked *Penang* 15 cases sold 6½d. per lb. Privately *Zanzibar* are dull, and for delivery little business has been done, closing Oct.-Dec. at 2⅛d. and Nov.-Jan. at 2⅛d. rather sellers, Jan.-Mar. buyers at 2⅛d. per lb. *Cassia vera*: 5 bales ordinary quill sold at 22s. per cwt. *Nutmegs* met less demand, and 152 packages East India kinds were only partially sold at easier rates, *Singapore* 116's sold at 1s. 2½d. per lb.; *West Indian* sold, good 82's at 1s. 9d. per lb, 93's at 1s. 7d. per lb., 123's to 116's at 1s. 1d. per lb. *Mace* remains dull. *Pimento* continues quiet, only 125 bags sold at previous rates, middling to fair, 2¼d. to 2⅜d. per lb. *Chillies*: The whole of the supply of 310 bales was bought in. *Capsicums*: 51 bales *East India* ordinary small round red and brown off-stalk sold at 16s. per cwt. *Pepper*: The great bulk of the offerings were bought in. *Arrowroot* remains flat.

STAVESACRE SEEDS—For new crop just arriving, 56s. per cwt. is asked.

SUGAR OF MILK.—*American* brand offers at 70s. per cwt.

TRAGACANTH GUM.—Very high prices are asked by holders for all grades which checks business. Bagdad *firsts* are quoted £14 10s. to £15 per cwt.

TURMERIC.—In very slow demand, with quotations unchanged.

WAX (JAPAN).—Prices are rather easier for near at hand, 40s. cwt. being asked for this position; for October to November shipment 37s. 6d. per cwt., *c.i.f.* terms. is quoted.

BANK RATE, 3 per cent.

LIVERPOOL MARKET REPORT, September 23.—Canaryseed has advanced since last week to 28s. to 28s. 6d. per 464 lbs. for Turkish, at which price about 1000 bags have been sold. Beeswax: Thirty-eight bales of Sierra Leone have been sold on private terms. Quillaya bark: Chilian has been selling at £13 10s. Castor oil is only in moderate demand, and transactions have been small in Calcutta, "good seconds" at 3d. per lb.; French, first pressure, at 2¾d. to 2⅞d.; and Madras, 2½d. per lb. Olive oil is firm at late rates, but business is only limited; Malaga is between £29 10s. to £30 per tun, and Seville, £28 10s. to £29. Linseed oil is still very flat at last week's rates, 17s. to 18s. 6d. per cwt. for Liverpool pressed oil. Cottonseed oil: Liverpool, 15s. 6d. to 16s.; American refined, 16s. 6d. per cwt. Spirit of turpentine: 19s. 9d. per cwt. Sal ammoniac: 37s. and 35s. per cwt. Carbonate of ammonia: 3d. per lb. Sulphate of ammonia: £7 18s. 9d. to £8 per ton. Bleaching powder: £6 10s. to £6 12s. 6d. per ton. Copperas, Lancashire: 38s.; Welsh, 36s. per ton. Sulphate of copper: £16 to £16 5s. per lb. Potashes: 20s. to 20s. 3d. per cwt. Pearlashes: 35s. per cwt. Cream of tartar is slow of sale at 91s. per cwt. Chlorate of potash: 4½d. per lb. Prussiate of potash: 7d. per lb. Bichromate of Potash: 4⅝d. per lb. Caustic soda: 70 per cent., £7 5s. to £7 10s. per ton; 60 per cent., £6 5s. to £6 10s. Soda crystals: £2 7s. 6d. per ton. Bicarbonate of soda: £6 15s. per ton. Borax: 18s. per cwt.; powder, 19s. Hyposulphite of soda: £5 10s. per ton. Sulphur: Flour, £7 10s. per ton; roll, £6.

NEWCASTLE CHEMICAL MARKET, September 22, 1896.—This market has lapsed into a dull tone. The bulk of Baltic shipments has now been made, and not much new forward business is mentioned. Sulphur is still firmly held owing to scarcity. General prices are:—Bleaching powder, £6 10s. to £7 10s., according to destination; soda crystals, 37s. 6d. to 45s.; caustic soda, 70 per cent., £7 5s. to £7 15s.; soda ash, 58 per cent., £4 5s.; alkali, 52 per cent., £5; sulphur, £4 15s; South Durham salt, 9s. 6d. per ton, *f.o.b.*, Tees.

MANCHESTER CHEMICALS AND DRYSALTERIES, September 23.—Business is far from brisk, especially in heavy chemicals, and prospects do not appear to improve. The price of £6 5s. per ton for bleaching powder over next year is generally confirmed, and for 58 per cent. ammonia alkali the contract figure is £3 5s. per ton, bags, and for 70 per cent. caustic soda £7 2s. 6d. In chlorate of soda more appears to be doing forward, although for prompt second-hand, parcels are being freely offered at under current rates. The low price is almost phenomenal, 5¾d. for home consumption, and 5⅛d. for export, as against 3s. per lb. a few years ago, when there was only one maker in the field, as against two at present, both in this district. Sulphate of ammonia goes lower and lower, and £7 8s. 9d. has been named at Leith, though with some reserve, the prevailing rate being £7 10s. Carbolic acids are quiet for prompt. Naphthas are quiet, though holders of best colourless or pure white solvent wood is quoted 2s. 3d. per gallon, and miscible nominally 2s. 8d. Saltcake is lower at 20s. to 21s. 6d. per ton. Benzoles are advancing, 50's being quoted 3s. 6d., and 90's 4s. 9d. prompt. Sulphate of copper is fairly steady at £16 5s. to £16 10s. for best brands delivered here. Brown acetate has improved a shade, and best Welsh varies £4 5s. to £4 10s. Green copperas firm at late rates. Glauber salts easier at 23s. to 24s., and Epsoms 60s. to 65s. Recovered sulphur unchanged at £4 15s.

PROPRIETARY ARTICLES TRADE ASSOCIATION.

A meeting of the Council of the above Association was held at Anderton's Hotel, Fleet Street, on Wednesday, September 23, at 4 p.m., when the chair was taken by Mr. G. R. Barclay.

The Secretary, Mr. W. S. Glyn-Jones, read the report of the Executive Committee. Amongst other things, the addition of Messrs. Hirst, Brooke, and Hirst's specialties to the protected list was reported, also that between thirty and forty cases of cutting had been investigated, and that with but one or two exceptions they had been satisfactorily arranged, most of the offenders expressing their pleasure at being asked to take a profit. Since the last list of those who had signed the Association agreement had been issued a large number of others had signed, amongst them being Messrs. Hovenden and Sons; Raimes and Co., York; Travers and Sons; May's Drug Stores; Home and Colonial Stores; Timothy White and Co., Portsmouth; Day's Southern Drug Co.; and Taylor's Drug Co. The report further stated that the instructions of the Council in regard to the appointment of local secretaries were being carried out, and that twenty-five appointments had already been made. It appeared that the results of the work of the Association at the Chemists' Exhibition, including the meeting at Craven Hall, had been in every way successful, and that during the exhibition week 110 members had joined the Association. Applications for membership had been received from the Aston Chemical Co., Birmingham, and Messrs. Wyleys, of Coventry, and several other proprietors had notified their intention of putting their articles on the list, but negotiations were not sufficiently complete to enable the Committee to lay their applications before the meeting.

Mr. Seely moved that for the remainder of the year Mr. J. Thompson, of Messrs. Maw, Son, and Thompson, be elected President, which was seconded by Mr. Shorrock, and unanimously agreed to.

Mr. Seely also moved "That the Council learns with regret that a large number of manufacturers who have joined the Association have not taken steps to prevent the cutting in prices of their articles, and that the Secretary be requested to communicate with such proprietors, in order that their reasons for withholding their articles from the protected list be laid before the Council at its next meeting." In support of his motion he said that since the last meeting of the Council he had interviewed about fifty or sixty chemists, all of whom complained that whilst a number of eminent firms had joined the Association, they had taken no steps to protect their articles. He feared that there would be some difficulty in getting a renewal of the subscriptions if the manufacturers who were members of the Association did not add their articles to the list. In moving this resolution he did not wish to speak disparagingly. He thought, however, it was only fair to the Council that, if proprietors connected with the Association did not protect their articles, the Council should know what their reasons

were for withholding their articles from the protected list.

After some discussion, the Secretary said that whilst he was anxious not to appear impatient, yet he had often a tendency to be disheartened, and that mainly because the manufacturers who were members, and who by being members had showed their sympathies with the movement, yet had not included their articles in the list. It made his negotiations with other manufacturers all the more difficult. He had now evidence to lay before manufacturers proving that the plan which they were working was effectual. Already the great bulk of the trade had fallen in with it, and the principal cutters had signed the agreement.

After further discussion, the resolution was put to the meeting and unanimously carried.

SHEFFIELD PHARMACEUTICAL AND CHEMICAL SOCIETY.

The annual meeting of the members of the Sheffield Pharmaceutical and Chemical Society was held on Wednesday evening at the rooms of the Society, Surrey Street. Mr. J. F. Eardley, President, occupied the chair, and there were present Mr. G. T. W. Newsholme, Mr. A. R. Fox, Mr. H. E. Ibbitt, and Mr. G. Squire, Hon. Sec. Voting papers for six members of Council were distributed, and the gentlemen selected were Mr. J. F Eardley, Mr. A. R. Fox, Mr. C. H. Hewitt, Mr. C. O. Morrison, Mr. J. Preston, and Mr. W. Ward. The other six members remaining on the Council are Mr. J. Austen, Mr. H. E. Ibbitt, Mr. G. T. W. Newsholme, Mr. G. Owen, Mr. S. T. Rhoden, and Mr. G. Squire. The Hon. Secretary read the annual report, which summarised the work of the Society during the past year, and stated the arrangements that had been made for carrying on the school of pharmacy. The School had done better last year, and the financial statement showed a balance in favour of the Society after expenses had been paid. The report was adopted. Efforts had been made to secure the presence of the President of the Pharmaceutical Society of Great Britain at the opening of the School to give the inaugural address, but he cannot come. The Society has been fortunate in securing for that duty Mr. David Storrar, of Kirkcaldy, Scotland, who is a member of the Pharmaceutical Council. The newly formed Council of the Sheffield Society will meet next week to elect from their number the president and other officers for the ensuing year.

NEW BOOKS AND NEW EDITIONS.

DEAFNESS: ITS PREVENTION AND CURE. Second Edition. By LENNOX PEIRSON. 2s. 6d. (Published by the Author, 3B, Blenheim Mansions, Stafford Street, W.)

EARLY WORK IN PHOTOGRAPHY: A Text Book for Beginners. By W. E. HENRY. (Dawburn and Ward.)

DEBILITIES AND DERANGEMENT OF THE GENERATIVE AND NERVOUS SYSTEMS: THEIR NATURE, TREATMENT, AND CURE. By WASHINGTON EVANS, M.D. 1s., post free. (1A, Cambridge Street, Hyde Park, W.)

THE REARING OF CHILDREN AND DOMESTIC HYGIENE. By THOMAS DUITON, M.D. 2s. London: Henry Kimpton.

THE HUMAN EYE AND ITS AUXILIARY ORGANS. By Dr. H. RENLOW. Edited by John Browing, F.R.A.S. 2s. 6d. net. (George Philp and Son.)

PHOTOGRAPHIC DARK ROOMS.

[Dark rooms, which are free to customers in most cases, are provided by the following chemists, who also stock photographic materials. Any additions to, or corrections of, the following list should be sent to the Editor.]

ALDERSHOT: E. H. ORANGE, 25, High Street.
ARBROATH: J. S. WHITE, 57, Guthrie Port.
BIRMINGHAM: SOUTHALL BROTHERS AND BARCLAY, Broad Street Corner.
BOSCOMBE: TAME AND CO.
BOURNEMOUTH: S. HARDWICK, 21, Commercial Road.
BOURNEMOUTH: F. E. BILSON, 1, Lansdowne Crescent.
BOURNEMOUTH: WILLIAM JONES, 254 and 256, Old Christchurch Road.
BOWNESS-ON-WINDERMERE: C. W. BIRKETT AND SON, chemists.
BRAINTREE: ROW AND SON, High Street.
BRIDLINGTON QUAY: J. V. MAINPRIZE, 9, King Street.
BUXTON: W. PILKINGTON, 11, Market Place.
CAMBRIDGE: BEALL AND SON, 25, Sidney Street.
CANTERBURY: E. BING AND SON, St. George's Street.
CHESTER: G. KEMP, 59, Bridge Street.
CHICHESTER: EDWIN THORP.
CLEVEDON: J. H. HART.
COLWYN BAY.—J. L. HUNT, Conway Road.
CONWAY: L. JONES Lancaster Square
DALBEATTIE.—HUGH KERR, 92, High Street.
DUMFRIES: A. TURNER, Buccleuch Street.
DUNFERMLINE: W. L. KER, 56. High Street.
EXMOUTH.—A. H. TOONE, 8, Rolle Street.
GOSPORT: W. B. SMITH, High Street.
HACKNEY, N.E.: W. SHARMAN, 247, Mare Street.
HARROGATE.—A. ATKINSON, 16, Regent Parade.
ILKLEY: G. W. WORFOLK, Chemist.
IPSWICH: WIGGIN AND SON, 34, St. Matthew's.
JERSEY: F. G. DE FAYE, 21, David Place.
KESWICK: T. W. TOWALEY, Market Square.
LANCASTER: WYATT AND CO., Stonewell.
LEICESTER: JOHN L. WEST, 3, Market Street; JOSEPH YOUNG, 16, Gallowhee Gate.
LINCOLN: DAVID S. WARK, 370, High Street.
LONDON: A. D. RAE, 6, Railway Place, Fenchurch Street, E.C.
LOWESTOFT: FRYER AND CO., The Pier Pharmacy.
MALDON.—ARTHUR W. HEAVER, 64, High Street.
MANCHESTER: W. MASKEW, 451, Stockport Road.
MARLOW, BUCKS: WILLIAM BAXTER, Dispensing and Photographic Chemist.
MIDDLESBROUGH: MIDDLETON AND CO. Chemists, opposite the Grand Hotel.
MIRFIELD: CHARLES CROOK, Easthorpe.
MORECAMBE: J. J. FELL, 59, Queen Street.
NEWBURGH, FIFE: A. W. SHIRRAS, Dispensary.
NEW MILLS: A. LIVESLEY AND SON, Cavendish Square.
NORWICH.—W. T. DAWSON, 76, Prince of Wales Road.
REDHILL: W. H. FOWLER, 2, Station Road.
RHYL: G. R. LAWRENCE, High Street.
RICHMOND: REX BLANCHFORD, 34, Hill Rise.
RICHMOND (Yorks): WALTON AND CO.
RIPON: H. B. RUDD, 29, Westgate.
ROCHDALE: WILLIAM BAMFORD, 242, Yorkshire Street.
ROCHESTER: F. J. MUSKETT, Guildhall Pharmacy.
ROTHESAY: W. B. JAMIESON, 64, Montague Street.
SCARBOROUGH: JOHN WHITFIELD, 113, Westborough, and on the Spa.
SOUTHAMPTON: W. MARTIN, 112, High Street.
SOUTHEND-ON-SEA: G. R. DAWSON, 42, High Street.
SOUTHPORT: J. R. CAVE, 52, Nevill Street.
SOUTHPORT: HENRY BALL, 121, Lord Street.
STOKE-ON-TRENT: J. H. ADAMS AND CO., High Street.
SUNDERLAND: JOHN WALTON AND SON, 298, High Street West.
TEWKESBURY: A. ENOCH, 124, High Street.
TEWKESBURY: L. L. STROUD, 131, High Street.
TORQUAY: E. A. HOLLOWAY, 34, Fleet Street, and 50, Union Street; J. W. COCKS, 1, Madeira Place; JOHN TAYLOR, 15, Lucius Street.
TROWBRIDGE: JOHN H. APLIN, 6, Silver Street.
UTTOXETER: A. PARKER, High Street.
UXBRIDGE.—RAYNER AND SON, 39, High Street.
VENTNOR, I.W.: J. W. LITTLEFIELD, High Street.
WENSLEY DALE: AARON KNAGGS, Hawes.
WHALEY BRIDGE: A. LIVESLEY AND SON, Market Street.
WINDERMERE: R. H. BARKER, 13, Crescent Road.
WORCESTER: W. T. HORNIBLOW, 33, Sidbury
WORTHING: A. B. CORTIS, 30, South Street.
YORK: G. COVERDALE, 65, Gillygate.

NEWS IN BRIEF.

AT UNIVERSITY COLLEGE, LONDON a series of advanced courses of lectures and demonstrations of a university type for the benefit of evening students will be inaugurated this session. Lectures will be delivered by the College professors, and the College laboratories will be opened to the evening students as freely as to the day students. The courses will include mechanical and electrical engineering and practical chemistry.

KING'S COLLEGE is associated with University College in this matter, and courses on civil engineering, architecture, experimental and practical physics, and pure mathematics will be given there by the professors. The fee for each course, of twenty or thirty lectures, will be £1 1s., and may be paid in two instalments.

AT BRISTOL the fees for work in the chemical, physical, biological, and metallurgical laboratories at the Merchant Venturers' Technical College, have been reduced considerably, in the hope that a still larger number of young men and women may be induced to take practical work, in addition to attending lectures.

CARBOLIC ACID was obtained from a Manchester chemist by Elizabeth Connor, 31, avowedly for disinfecting purposes. She drank it, died, and the verdict was "suicide whilst insane."—Archibald Nicholls stole an overcoat, pawned it for 3s., and bought carbolic acid. A charge of attempting suicide was not gone into, but he was sent to prison for one month for stealing the coat.

MR. G. B. MILLETT, medical officer for Penzance, and a well-known authority on Cornish antiquities, died last week after a short illness.

ADULTERATION OF GROUND GINGER, was the charge against a firm of Newport grocers last week. The public analyst for Shropshire certified that the ginger contained 25 per cent. of spent ginger, but admitted he had only made three previous analyses of ground ginger. The Lancashire County Analyst, who has made hundreds (?) of such analyses every year, certified that the ground ginger in question was absolutely free from spent. The case was dismissed.

THE ANNUAL BOWLING MATCH between rinks representing the Chemists of Partick, and the Glasgow Apothecaries Company, was played on Bellahouston Green, on Wednesday afternoon, 16th inst. In spite of the bad condition of the green, caused by the heavy rain, the game was a most enjoyable one, and after being well contested ended in favour of the Partick Rink by 6 shots. The representatives were as follow:—Partick: George Robertson, W. L. Currie, Robert Gordon, John McNicol (skip)—22 shots. Glasgow Apothecaries Co.: John Lillie, Colin Campbell, John Walker, David Houston (skip)—16 shots.

EXCHANGE—OFFERS AND WANTS.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Miscellaneous.

Disarticulated skull, good condition, 10s. 6d.—Hatfield, Chemist, Limehouse, E.

Two 1-lb. bottles of 1888 Mitcham oil of lavender, guaranteed; what offers?—Fox, Chemist, St. Helens.

Seidlitz Paper, demy 15 lbs., 5s 9d. per ream; two reams, 11s. 3d.—"Burton," Heath Bros., Blackfriars Street, Manchester.

Students' microscope, three powers, mahogany case, good as new, cost £2 2s.; will send, carriage paid, for £1 1s., or exchange for banjo of equal value.—Green, Lavenham.

Petroleum emulsion, white, permanent, palatable, improves by keeping, in use three years; formula, 1s. 6d.—Sumner, Chemist, Burnley Road, Reedley, Burnley, Lancs.

Rare Chance.—Ink manufacturer offers his full set of valuable modern formulæ, finest selection of writing inks in the world; specially suitable for manufacturing or wholesale chemists. List, with full particulars free for stamp.—Deane, 95, West Graham Street, Glasgow.

Books, etc.

To Students! First Book of 'Cæsar,' with translation and grammatical notes, 5s.; Tully's 'Metric System,' 1s.; Newth's 'Chemistry,' 6s. 6d; Roscoe's 'Elementary Physics,' ditto 'Chemistry,' 4s. 6d.; 'Royal Road to B.P.,' 1s.; 'Doses and Strengths,' 6d., all at half published price.—Picken, Newport, Shropshire.

'Year-book of Pharmacy and Transactions of the British Pharmaceutical Conference,' from 1874 to 1892 inclusive, new, offers, no cards.—Spencer, Villetta, Drayton Park, Hanwell, London, W.

OFFERED—(*continued*).

Books, must be sold, owner overstocked:—Everett's 'Physics'; Proctor's 'Pharmacy' (1892); Thorpe's 'Quantitative Analysis'; Bayley's 'Pocket-Book for Pharmacists'; Goodeve's 'Mechanics'; Valentine's 'Qualitative Analysis Tables.'—Address Hogg, York Street, Belfast.

'Chemist and Druggist' from 1886 to 1894, inclusive, three numbers missing 1887, one 1891; offers wanted.—Harpley, 28, Somerleyton Road, Brixton, S.W.

Free, as new, Milton's 'Gonorrhœa and Spermatorrhœa,' 2 vols. (16s.), 7s. 6d.; Berkeley Hill's 'Syphilis' (18s.), 7s. 6d.; Sir H. Thompson's 'Diseases Urinary Organs,' 3 vols. (30s.), 7s. 6d.—Davis, "Chestnuts," Gordon Hill, Enfield.

A book of 130 Well-tried Recipes for Chemists and Druggists, comprising well-selected formulæ for general, remedial, veterinary, toilet, and everyday preparations. Post free, 1s. 6d.—Tully, Chemist, Hastings.

Fine copies, free. Barnes' 'Obstetrics,' illus., two thick vols., pub. 36s., 12s. 6d.; Boag's 'Imperial Lexicon,' two thick vols., well bound, cost £2 unbound, 12s. 6d.—Davis, "Chesnuts," Gordon Hill, Enfield.

Shop Fittings, etc.

For immediate disposal, whole or part of first-class chemist's shop fittings and stock; valuation or reasonable offer.—J. E. Ray, Solicitor, Hastings.

Counter Vice for holding syphons while cleaning, tops easily polished like new, price 5s.—Perks, Beeston, Notts.

OFFERED—(*continued*).

For Sale.—Upright Show-case, ebonised, 5 feet high, 4½ feet long, 8 inches back to front, 6 movable shelves, £3; also 'Chemical Recipes,' quite new, cost £1 1s., price 17s. 6d.—W. H. Delve, 310, Stretford Road, Manchester.

Sixteen ft. range (3 nests), drawers, lockers, shelving, another 5 ft., 18 ft. counter, side counter, dispensing screen, desk, carboys, bent glass case, 300 bottles; bargain.—5, London Road, Twickenham.

For Sale. Splendid Chemist's Fittings, including drawers (228), about 24 ft. run; Counter, 20 ft. 10 in.; Handsome Wall Case, 15 ft. 7 in. long, 8 ft. 5½ in. high; Counter Case, etc.—Wilson, Lenton, Nottingham.

Six-gallon window carboy, cut glass stopper, York Glass Co.'s. Offers?—Brigstocke, chemist, Carmarthen.

Photographic Apparatus.

Two Lancaster's cameras, instantograph, 18 £6 lens, stand, two double dark slides, 35s.; ladies' folding with stand, pneumatic shutter, dark slides, 35s.; both new.—Evans, chemist, Aberystwyth.

WANTED.

Urgently, present address of F. Thomas, late of Dudley, late of Chaddesley Corbett, and late of London; left Dudley on September 3.—Ince, Dudley, Worcester.

Pear's glycerine-soap, each tablet stamped 30 per cent. glycerine; any quantity to a dozen boxes; state price.—Fowler, Redhill.

MR. J. L. BRAGG, of Wigmore Street, the well-known maker of charcoal biscuits, lozenges, and tablets, is dead.

MR. DAVID STORRAR, of Kirkcaldy, Member of the Pharmaceutical Society, will deliver the inaugural address to the students of the Sheffield School of Pharmacy on Thursday, October 8.

MESSRS. BURROUGHS, WELLCOME AND CO. have been awarded a gold medal for pharmaceutical products by the committee of the International Exhibition at Kiel.

MR. S. HARVEY, 5, Denman Street, London Bridge, S.E., will be pleased to forward to any readers of the *Pharmaceutical Journal* on application a neat show tablet, calling attention to Dr. Mackenzie's arsenical soap.

MR. C. T. KEMP, of Bristol, has acquired the business of Mr. H. S. Pearmund, pharmaceutical chemist, at Hereford, and that Mr. Pearmund has purchased the Kent Drug Stores, carried on by Mr. Chabot, in High Street, Tunbridge Wells.

ERNEST GEORGE BALL, aged three years four months, died at Patchway, in Gloucestershire, last week through drinking from a bottle, which he had picked up, containing poison; and at the inquest, held by Dr. E. M. Grace, the Jury returned a verdict of "death from misadventure by accidentally taking poison."

MR. W. WILKINSON, chemist and druggist, of Colne (Lancs.) in a recent letter to the *Colne and Nelson Times*, denies that the remarks of Mr. W. F. Eckroyd on the excessive indulgence in drugs like chloral (see *Pharm. Journ.*, September 5, p. 209) applies to Lancashire people at all. As the oldest chemist in Colne and district he says, "So far as chloral hydrate is concerned, I have never sold it nor dispensed it, except as prescribed by medical gentlemen." He gives Lancashire people credit for more good sense, and does not think this particular vice lies at their door.

RAT POISON was taken by two young men last week for the purpose of self-destruction, but in both cases the result was not fatal. Robert W. Mann, 21, of Exeter, was remanded by the Barnstaple magistrates, and Walter Holmes, 19, of Barnsbury, was bound over to be of good behaviour for three months at the North London Police Court.

LATE ADVERTISEMENTS.

Assistant Wanted.

G. J. WILDING, The Birkdale Pharmacy, Birkdale, Southport, requires a JUNIOR or IMPROVER. State age, height, salary, &c., with photo (to be returned).

Engagement Wanted.

ASSISTANT. 25. 7 years' experience. Highest references. Disengaged. 13, Ashchurch Grove, W.

MARRIAGES.

CARMAN—HUTCHINSON.—On August 8, at Ceres, Cape Colony, F. H. Carman, pharmaceutical chemist, of Woodstock, late of the Apothecaries' Hall, London, to S. M. Hutchinson, daughter of F. P. Hutchinson, chemist, of Ceres.

JONES—SMITH.—On September 16, at Portland Baptist Chapel, Southampton, by the Rev. J. M. G. Owen, of Birmingham, assisted by the Rev. Carey Bonner, of Southampton, Mr. Noel Crossley-Jones, manager of Messrs. J. Moss and Co., Galen Works, Wilson Street, New Cross Road, S.E., to Ethel, second daughter of Mr. J. R. Smith, J.P., of "The Hollies," Archers Road, Southampton.

JENNINGS—MASON.—On September 16, at Queenstown Presbyterian Church, by the Rev. V. J. Cotter, A.B., assisted by the Rev. William Simpson, R. T. Jennings, M.P.S., L.P.S.I., Albion Terrace, Wandsworth Road, London, to Jennie, second daughter of Mr. Robert Mason, of Fort Westmoreland, Queenstown.

TOWAN—EVANS.—The marriage has taken place at Lurgan of Mr. Frederick William Towan, A.P.S., Plymouth, to Miss Mary Anna Evans, youngest daughter of the late David Evans, Esq., Lurgan.

« Market Report »

And Prices Current of Drugs, Chemicals, Oils, and Seeds.

The quotations here given are in all cases the lowest net cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

[Specially Compiled for the 'Pharmaceutical Journal.']

LONDON REPORT.

London, October 1, 1896.

There has been a somewhat improved demand in the drug and chemical markets since our last report, and a fair amount of business has resulted. In the chemical market carbolic acid is unchanged, but a fair demand is reported. Citric and tartaric acids are rather weak, whilst cream of tartar is still neglected. The makers of permanganate of potash have raised their quotation during the week, whilst on the other hand tartar compounds are decidedly easier. Acetanilide continues to advance in price, whilst glycerin is for the moment somewhat neglected. Star anise oil is firmly held, whilst dementholised peppermint oil sold cheaply at to-day's drug sales. In regard to the auctions, a heavy catalogue was offered to-day, but the changes were but few. Bohia ipecacuanha sold at steady rates, whilst Carthagena root was all bought in. Cape aloes are again rather easier, but cardamoms are in exceedingly good demand at advanced prices. Gum elemi is cheaper, whilst good qualities of senna are scarce. Beeswax is steady for Jamaican, whilst Japan wax is in good demand privately. There is little of interest to be noted in the allied markets, and the following detailed account will speak for itself:—

Acacia (Gum).—Demand is limited, and transactions are on a small scale, but holders of Soudan sorts are somewhat firmer. In sale

Acetanilide—Has been advanced to 1s. 4½d. per lb. for 10-cwt. lots. In view of the advance in value of raw material, this price is still comparatively low, and we may very likely see a further advance. Meanwhile, there are still some second-hand sellers at somewhat cheaper rates.

Acid, Carbolic.—Market without change, but a further improvement in demand is anticipated; 34°–35° *crystals* still quoted 6d. to 6¼d., according to make; 39°–40°, 6½d. per lb. for ice crystal. *Crude*: Slightly easier at 1s. 9d. per gal. for 60°, and 2s. 1d. for 75°. Liquid 95 per cent., 11d.

Acid, Chrysophanic.—The demand is somewhat quiet, although the position of the crude product is still strong. Quotations range from 22s. to 25s. per lb., according to quantity.

Acid, Citric.—The B.P. quality is rather easier at 1s. 2d. to 1s. 2¼d. per lb. *Concentrated juice*: £13 5s. per pipe, *f.o.b.* Messina.

Acid, Tartaric.—Dull. *English*: From second-hand, 1s. 1¾d. to 1s. 2d. per lb.; *Foreign*, 1s. 1d. per lb.; whilst *powder* ground here from foreign crystals is quoted 1s. 1¼d. per lb.

Aloes.—*Curacao*: Demand very quiet and no bids could be obtained for good, although importers were prepared to meet the market. For good fair livery 30s. per cwt. was suggested. *Cape* was rather easier at 23s. for fair hard bright, down to 21s.; softish and slightly drossy *Socotrine* was firmly held for 80s. per cwt., which price buyers were not willing to pay.

Ammonia Compounds.—*Sulphate* continues quiet. *Gray* for prompt delivery, 24 per cent., London, quotes at £7 12s. 6d.; Hull, £7 10s.; Leith, £7 8s. 9d.; Beckton, £7 10s. *Sal ammoniac*—Unchanged at 37s. per cwt. for firsts, and 39s. per cwt. for seconds. *Carbonate*: 3d. per lb. in *casks*, and 3¼d. per lb. in *jars*.

Ammoniac (Gum).—For one case of fair pale drop, 47s. 6d. was bid, but it was held for 50s. per cwt.

Aniseed.—Nineteen packages *Syrian*, 21s. bill held for 22s.

Annatto Paste.—Five cases from New York were sold without reserve at 7d. per lb.

Argol.—Fourteen packages *Italian* were bought in at 65s. (60s. bid), and two bags siftings held at 30s.

Arsenic.—*English powder* very firm at 25s, in *kegs*, for spot and early delivery, and only limited quantity obtainable; for later delivery less would be accepted.

Asafœtida (Gum).—A great deal of quiet buying has been going on for the past three or four weeks, and in consequence prices are now very considerably higher. For fair ordinary quality 70s. per cwt. has been refused, 75s. being asked; this quality was sold a month ago at 45s. per cwt. In sale 38 cases were offered, and were all bought in at 67s. 6d. for fair grey pinky block, 55s. for grey and brown block, dry, and at 38s. for grey and brown broken block, heavy and sandy.

Balsam (Peru).—One package 6s. bid bought in at 7s.; 1 package 6s. 6d. bid bought in at 7s. 3d.

Balsam (Copaiba).—Three casks good *Maranham* bought in at 2s.; 1 cask bought in at 1s. 9d.

Benzoin (Gum).—A total of 475 packages offered in sale, viz., 98 packages *Siam*, 171 packages *Sumatra*, 155 packages *Palembang*, and 51 packages Penang. Of these nearly 500 packages of all descriptions, the larger proportion had to be bought in, the sold part realising rather lower rates. *Siam*: Pea size and rather dusty sold at £7 15s. per cwt., whilst 47s. to 90s. per cwt, was paid for dark seedy block, the better grades of free almond being held for £16 to £20 per cwt. *Sumatra* lower at £5 5s. to £8 15s. per cwt., the latter price being paid for good *seconds*, which realised £9 10s. at last sale; 85s. per cwt. was paid for medium seconds with small almonds and false-packed sides and ends. *Penang* or *Palembang* kinds were without demand, practically the whole of the lots offered having been bought in.

Bleaching Powder—Quiet and unchanged at £7 10s. per ton on spot.

Borax.—Unchanged at 18s. for *crystals*, and 19s. for *powder*.

Buchu Leaves.—Yellowish *round* leaves sold at 2½d., and fair green at 3d. per lb.

Caffeine—Quiet and unchanged at 18s. to 19s. per lb. according to quantity for *pure* and 14s. 9d. to 15s. per lb. for *citrate*.

Camphor—Is steady. Refiners ask 1s. 6d. to 1s. 7d. for *bells*, according to quantity. The new firm of refiners would probably supply their German-shaped *bells* at 1s. 5½d. for ton lots.

Camphor (Crude).—Two cases *China* sold at 86s., and one case sweepings at 70s. per cwt.

Camphor (crude)—Remains quiet but firm, *China*, October to November shipment, 110s. per cwt., *c.i.f.*, at which price there are also sellers of *Japan* for same shipment.

Cantharides.—*China*: 5 cases bought in at 1s. 1d.

Cardamoms—Are in very steady demand, mainly for America, and are about 2d. to 4d. dearer. To-day up to 3s. 8d. per lb. was paid for fine bold pale *Ceylon-Mysore*. Good ditto sold at 3s. to 3s. 4d.; medium size, 2s. 11d. to 3s. 1d.; split, 2s. to 2s. 2d. *Seed* realised 3s. 5 d. per lb.

Castoreum.—Seven packages sold, *firsts* at 50s. to 53s, *secands* at 43s. to 45s., *thirds* at 30s. to 33s. *pickings* at 17s. per lb.

Cascara Sagrada.—Of 70 bales offered part had been sold prior to auction. The rest were bought in at 18s. per cwt.

Cassia Fistula.—The 43 bales offered met with no demand. Very lean common quality being bought in at 10s. per cwt.

Chaulmoogra Oil—Is scarce at the moment, and somewhat higher prices are asked, 2s. 8d. to 2s. 9d. per lb. having been paid for case lots.

Civet.—6 horns fair, but weak flavour,

bought in at 35s. per oz.; 3 horns stated to be good genuine, but guarantee refused, bought in at 37s. 6d., 40s., and 45s. per oz. respectively.

Cloves.—Only 147 bags *Zanzibar* were offered. Eleven bags common dark sold at 1¾d. per lb.; 70 bags *Amboyna* bought in at 4d. to 4½d. per lb.; and 6 cases fine picked *Penang* at 9d. per lb. *Ceylon* low; dark sold at 1⅞d. per lb. Privately *Zanzibar* are quiet but steady, with buyers for November-January at $2\frac{5}{32}$d. per lb.

Coal Distillation Products.—*Benzole*: Unchanged, 50 per cent., 3s. 4d., and 90 per cent., 4s. 9d. per gallon. *Toluol*: 2s. 2d. per gallon for pure. *Crude naphtha*: 30 per cent. at 120° C., 1s. 6d. per gallon.

Cocaine Hydrochlorate.—There is no change in market prices, which range from 13s. 7d. to 17s. per oz., according to packing and quantity. There is still a little offering from second hand at a little below makers' quotations.

Codeine.—Quiet at 11s. 9d. per oz. for 100-oz. lots.

Cod Liver Oil.—Of 67 casks rather yellowish Norwegian from Hamburg 60 casks sold at 140s. per barrel; for remainder holder asks 170s.

Cream of Tartar.—Spot is unchanged at 85s. per cwt. for good white *crystals*, and 87s. per cwt. for fine white *powder*.

Cubebs—Met with no demand, fair Singapore bought in at 32s. 6d. per cwt.; 5 bales shrivelled stalky were sold without reserve at 25s. per cwt.

Cumin Seed—Chiefly bought in.

Dragon's Blood.—Four cases dry saucer dark fair colour bought in at 85s. per cwt.; 9 cases very seedy block at £5 15s.; 4 cases rather better at £6 10s. per cwt.; for 5 cases good reed, good colour (bought in at £9); £8 15s. per cwt. would be taken in order to clear.

Elemi (Gum)—Lower, good pale sold at 20s. to 22s. per cwt.

Ergot of Rye.—Privately sound Spanish is held for 5½d. to 6½d. per lb. In sale 15 packages of bold, but very weevilly, were offered, and bought in.

Fennel Seed—Sold at 11s. for sound, 9s. to 10s. per cwt. for damaged.

Galls.—Stocks are increasing, and importers are anxious to make progress, although privately they decline to accept bids which are not fully up to their limits. Blues alone meet with any inquiry, *Bussorah* being quoted 51s. to 52s. per cwt. *Smyrna*, 44s. to 45s. per cwt. *Morea*: None offering, either spot or forward. In sale about 500 packages were offered

Gamboge.—Fair *Siam* pipe, but blocky and very damp, sold at £8 15s., which shows a firm market.

Gentian (Root).—Very firm at 21s. 6d. to 22s. for really good quality. A little has been sold at rather lower rates, but no more is obtainable thereat.

Ginger.—At Auction 1238 bags rough *Cochin* were offered, but the demand being slack, only 330 bags were sold at rather easier rates, the bulk of the same being "without reserve." Medium and small washed, 29s. 6d. to 31s. per cwt.; lower qualities down to 13s. 6d. to 14s. per cwt. for very low shrivelled small. Of 195 cases, cut kinds, 75 cases sold at firm rates, medium and small limed native, half cut, 40s. to 42s. medium ditto, 48s.; good medium, *B* cut, 58s. per cwt.; 45 bags limed *Japan* bought in at 16s. per cwt. Of 26 barrels *Jamaica*, 7 barrels good middling washed sold at 90s. per cwt.

Glycerin.—The position is strong, although at the moment the demand remains somewhat quiet. America is stated to have so far taken only about one-third of its usual requirements, which may possibly be in part attributed to the financial uncertainty in connection with the forthcoming Presidential election. Should the demand from this quarter become more active, prices might readily become distinctly firmer. *German* white, doubly distilled, S.G. 1260, is still quoted 73s. to 75s. per cwt., according to brand, while English make is obtainable at somewhat lower figures.

Guinea Grains.—Eight packages sold at 16s. per cwt.

Honey.—Eight packages *Jamaica* sold at 23s.; 3 ditto, without reserve, at 20s. per cwt. Fifty barrels fair pale to brownish *Chilian* bought in at 42s. down to 39s. per cwt.; 27 cases *Honolulu* sold at 21s. 6d. to 22s. per cwt.

Ipecacuanha.—Steady. Wiry *Rhio* sold at 5s. 8d. to 5s. 9d. per lb.; fair bold, 6s. Thirteen bales were also bought in at 6s. per lb.

Juniper Berries are being offered from Italy at 6s. 9d. per cwt. *c.i.f.* terms. On account of the wet weather it is thought that later on higher prices may be asked.

Kamala.—6 cases bought in at 6d. to 1s. per lb., and 3 cases at 5d. to 5½d. per lb.

Kino (Gum).—7 cases bought in at 10s. per lb. for good genuine red, and 2s. per lb. for blocky.

Kola Nuts.—1 case *West Indian* sold in spice auction at 5d. per lb., 38 bags bought in to-day at 4½d., 5d., and 6d. per lb. respectively for rough, dull, and washed.

Liquorice Root.—With a moderate stock ordinary rough *Syrian* is selling at 7s. 6d. per cwt. *Decorticated* is quoted 20s. to 30s. per cwt., according to quality. *Powder*, 29s. to 37s. per cwt.

Mastic (Gum).—Stock is heavy, and importers would be ready to accept lower prices for quantity, but consumers prefer to buy from hand to mouth. Pale tear quotes at 1s. 5d. per lb.; milky and yellow, 1s. to 1s. 1d. per lb.

Menthol.—For good brands on spot 8s. 6d. per lb. for cases and 9s. for single tins is asked; same are, however, still obtainable to arrive at 6s. 9d. per lb., *c.i.f.*

Mercurials.—Makers' prices remain unchanged at 2s. 5d. per lb. for *calomel*, and 2s. 1d. per lb. for *corrosive sublimate* in 2 cwt. lots, 5 cwt. lots 1d. less.

Morphine.—No change. Market quiet. Price for 1000-oz. lots being 5s. 4d. per oz. for powdered salts, crystals, 2d. per oz. more.

Myrrh (Gum).—Of 25 cases good *native* picked was bought in at 75s. to 80s. per cwt.; ordinary sorts at 25s. to 30s., and drossy pickings at 15s. to 17s. 6d. per cwt.; eight casks of fair sorts sold at 35s. per cwt.

Oils (Essential).—*Sandal wood* oil rather easier for English drawn, 11s. 6d. per lb. being quoted for quantity. *Star aniseed* continues firm, with sales for arrival, September to November steamer, at 7s. 3d. per lb., *c.i.f.*, spot being quoted 9s. 9d. per lb.; 3 cases in sale were bought in at 10s. per lb. *Cinnamon*: 4 cases offered as genuine sold at 6d. per oz. Japan *Peppermint*: 61 cases Cocking's dementholised sold without reserve at 3s. 1d. to 3s. 2d. per lb.

Opium.—Quiet. Nothing fresh to report. Druggists *selected*, 9s. 6d. to 10s per lb.; *seconds*, 9s. to 9s. 6d. per lb.; *soft shipping*, 10s. 6d. to 13s. 6d. per lb., according to kind and quality. *Persian*, fine quality, 11s. 6d. to 12s. Some low quality dark paste has been sold at 9s.

Orris Root.—Of 10 bales of *Florentine* 5 bales bought in at 65s.; the other 5 bales held for 80s. *East Indian* was bought in at 15s. to 25s. per cwt.

Potash Permanganate.—The combined makers have this week advanced their quotation 5s. per cwt., prices being now 70s. to 72s. 6d. per cwt. for small *crystals*, according to quantity. Makers have, however, sold so far ahead that it is difficult to place orders with them except for distinctly later delivery. On the spot the article remains very scarce, and 80s. to 85s. per cwt. is asked. It has been asserted that a new technical use has been found for this article; this, if correct, would, in part at least, account for the existing excess of demand over supply. In sale, 5 casks, each 2 cwt., of small *crystal* were bought in at 75s. per cwt.

Quicksilver—Remains at £6 12s. 6d. per flask from first hand, 6d. less from second-hand. It is said that a further advance is not improbable.

Quinine.—Market for spot practically unchanged, holders asking 10¾d. to 10⅞d. per oz. for second-hand *German* bulk. It is reported that a parcel of 20,000 ozs. of Auerbach brand is being returned from America, and it is expected that the same will come for sale on this market. A parcel of 4000 ozs. of the new *French* make (Dubose) was advertised for sale at the drug auctions, but has since been withdrawn with the object, it is stated, of the same being first submitted to analysis.

Rhubarb.—High dried sold at 10d. per lb. for bold to medium flat, part grey, part pinky, small round Canton at 11½d., good medium flat Canton sold at 1s. 2d., trimmings at 1s. 1d. per lb. Without reserve good flat high dried realised 9½d.

Scammony Resin.—Makers of the B.P. article are again somewhat easier in their views.

Seidlitz Powder.—Following reduction in price of *soda tartarata*, the present value of this article is reduced to 62s. 6d. per cwt.

Senna.—*Tinnevelly*: The offerings were again of a low average quality, and from all appearances bold leaf of good colour will be very scarce this season; small leaf of poor colour sold at 1d. to 1¾d. per lb.; medium leaf at 2d. to 2½d. for poor to fair colour; whilst the better lots, which were scarce, met with more competition. No Alexandrian leaves offered in sale; a small lot has just arrived, and is in course of landing.

Soda Tartarata.—Tartars being very weak, makers yesterday reduced their price 10s. per cwt., making present price 71s. to 74s. per cwt., according to quantity.

[Shellac.—Privately demand is steady. In public auction on Tuesday the fair supplies were sold at an advance of 1s. per cwt. *Second orange* opened weaker, but closed firm at rather dearer rates, fine quality realising extreme prices. Of a total of 760 cases offered, 450 cases sold, good to fine

orange at 83s. to 97s. per cwt., *second orange* at 72s. to 79s. per cwt. For arrival Calcutta is firmer at 79s. per cwt., *c.i.f.*, for *TN* November to January steamer, but there are sellers in this market for same position at 77s.; buyers, however, decline to pay more than 76s. per cwt., *c.i.f.*

SPICES (VARIOUS).—*Cassia Lignea*: All bought in at 24s. to 33s. per cwt. *Chillies*: Quiet. Of 110 bales *Zanzibar* only 22 bales middling dull sold at 37s. 6d.; ordinary brown at 30s. per cwt. Mace: A good supply went off flatly at about previous rates, *Penang*, good pickings, 1s. 2½d.; ordinary brownish, 1s. 3d. per lb.; *West Indian* ordinary to good, 1s. 2d. to 1s. 7d. per lb. *Pepper*: Very quiet, and mostly bought in.

SUGAR (BURNT)—Is 1s. per cwt. dearer at 19s. 6d. to 21s. per cwt. for *spirit colouring* and 19s. to 20s. 6d. for *vinegar colouring*, according to package.

TRAGACANTH (GUM)—In better demand, but without material change in price. *Baghdad firsts*: £14 15s. per cwt.; *seconds*, £13 to £13 10s.; *thirds*, £12 to £12 10s. *Smyrna* qualities are difficult to place, although importers are willing to meet buyers.

TURMERIC—Firm but quiet. There are sellers of *Bengal* on spot at 7s. 6d. per cwt. *Cochin*: business has been done at 8s. per cwt. for fair finger, and at 7s. per cwt. for bulby ditto. No sale.

TURPENTINE.—The market is very strong with a further advance in price. Demand exceeds supply and prices close 20s. 9d. for *American* on spot. November to December, 21s.; January to April, 21s. 9d. per cwt. The rise appears to be mainly due to the news of serious storms in America.

VANILLOES—Good quality being scarce, went at fully late rates, ordinary quality, 6½ to 7 inches, 27s. to 27s. 6d. per lb.; 7 to 7½ inches, 29s. for fine; ordinary, 5½ to 6 inches, 19s. 6d. to 20s. 6d. per lb.

WAX.—*Japan* continues strong, and prices are again higher for arrival. October to November steamer has sold at 39s. 6d., but holders now ask 41s. per cwt., *c.i.f.* On the spot a few cases have sold at full prices. Of 68 packages *Zanzibar*, part sold at £5 10s.; rest bought in at £6 to £6 10s. per cwt. Five bales white wax from Hamburg fetched £7 12s. 6d. per cwt. *Jamaica* fetched £8 to £8 5s. *Australian*: Of 14 bags 1 sold at £6 10s.; remainder bought in at £6 10s. to £7.

LIVERPOOL REPORT.

SEPTEMBER 30, 1896.

ACACIA (GUM).—Twenty-five serons of sorts sold on private terms.

BEESWAX.—Twenty sacks Chilian, £7 to £7 15s. per cwt.; Gambia, £6 10s.

CANARYSEED—Continues its upward movement, and there is little disposition to sell; 100 bags of *Spanish* made 43s. per 464 lbs., and some 1000 bags of good *Turkish* sold early in the week for 28s. to 28s. 6d. per 464 lbs., but since then fair quality has made 28s. 6d., and good 29s.

HONEY is in good demand, and about 250 barrels of *Chilian* have found buyers at the following prices:—*Pile I.*, 21s. to 22s. per cwt.; *Pile II.*, 20s. to 20s. 6d.; *Pile III.*, 19s. KOLA NUTS have sold at 2½d. per lb. for dried.

LINSEED—Is firmly held, there being few sellers in any position, and stocks are somewhat low; 5700 bags of *River Plate* sold for 28s. per 416 lbs.

OILS (FIXED) AND SPIRITS.—*Castor* is fairly steady with medium amount of business passing; *Madras*, 2⅝d. to 2¾d.; *Calcutta*, 3d.; *French*, 1st pressure, 2⅝d. to 2¾d.; and *Belgian*, in barrels, 2½d. per lb. *Olive* maintains its recent advance, and the prices are still as given last week. *Linseed* held for 17s. to 18s. 6d. per cwt. for Liverpool makes. *Turpentine* now selling at 20s. to 20s. 3d. per cwt.

MANCHESTER REPORT.

SEPTEMBER 30, 1896.

The changes here since our last have been principally of a downward character. In alkalies a fairly good business is passing for contract over next year, *Ammonia alkali*, 58 per cent., being quoted at £3 3s. 9d.; 70 per cent. *Caustic soda*, £7 2s. 6d.; and *Bleaching powder*, £6 5s. per ton. *Chlorate of soda* is unchanged at 5⅝d. per lb. for export, and 5¾d. home consumption, the only two makers of the article firmly holding for this. *Soda crystals* are dull at 35s. to 37s. 6d. per ton in bags on rails. *Bicarbonate of soda* remains fairly firm at £6 5s. per ton in 10-cwt. casks, and £6 10s. per ton 1-cwt. kegs. *Industrial bicarbonate*: £4 5s. per ton bags; £5 5s. to £5 10s. per ton 1-cwt. kegs, all on rails at works. Northwich. *Yellow prussiate* is easier, but local makers of best Lancashire hold for 7d. to 7¼d.; foreign being quoted as low as 6¾d. *Salt-cake* varies from 20s. to 21s. 6d. *Chlorate of potash* is firmer at 4½d. *Naphthas* remain dull, but best solvent wood (colourless or pure white) is still quoted at 3s. 3d. per gallon. *Benzoles* are easier. *Acids* are decidedly lower. *Oxalic* quoted by local maker, 3¾d. *Pitch* tends downwards. *Glauber* salts 23s. to 24s. per ton bags. *Epsoms*, 60s. to 65s.

NEWCASTLE REPORT.

SEPTEMBER 29, 1896.

This chemical market does not show any improvement, and certainly not in keeping with other local industries. Values are maintained on "Union" scale of prices, but the West Coast outside makes are coming more freely to the front. Quotations keep at for *bleaching powder*, according to markets, £6 10s. to £7 10s.; *soda crystals*, 37s. 6d. to 45s.; *caustic soda*, 70 per cent., £7 5s. to £7 10s.; *soda ash*, 52 per cent., £4 5s.; *alkali*, 52 per cent., £5; *sulphur*, £4 15s. per ton.

NEW BOOKS AND NEW EDITIONS.

ROYAL GARDENS, KEW: Hand-list of trees and shrubs grown in Arboretum. Part II. 1s. (The Gardens.)

FAVOURITE FLOWERS OF GARDEN AND GREENHOUSE. By EDWARD STEP, F.L.S. No. 6. 1s. net. London: F. Warne and Co.

PLYMOUTH, DEVONPORT, STONEHOUSE & DISTRICT CHEMISTS' ASSOCIATION.

The fourth annual business meeting of the Plymouth, Devonport, Stonehouse and District Chemists' Association was held on Wednesday evening at the Foresters' Hall, The Octagon, Plymouth. Mr. C. J. Park (President) occupied the chair, and there were also present Messrs. J. H. Bailey, J. G. Netting, H. Vibert, E. A. Hodge, James Cocks (Secretary), W. Condy U'Ren, F. H. Ralph, Geo. Breeze, E. W. H. Green, A. D. Breeze, G. Fairweather, W. H. Woods, M. Johnson, O. A. Reade, H. J. Reynolds, F. W. Hunt, R. F. Roper, C. J. Weary, M. Treneer, F. Maitland, Hellier, Osborne.

The third annual report was presented, and showed the Association to be in a highly satisfactory position, with a numerical strength of one hundred and eleven members, and a balance to the good in the Treasurer's hands.

Mr. H. S. Wellcome was elected an hon. member of the Association, and Messrs. Roy, Carveth, Osborne, and Tout members of the junior section. Mr. A. D. Breeze proposed an alteration in the rules so that past-presidents shall be *ex-officio* members of the General Committee, with full power to act on special and sub-committee if desired, but the number not to exceed three, and pointed out that if his resolution was not carried they would lose the services of gentlemen who had worked hard in the interest of the Association, and knew the workings perfectly well. At that moment it would remove Mr. J. G. Netting from the active list if the resolution was not carried, and they could at least let the resolution be in force for a few years, until the past-presidents grew too large. Mr. James Cocks supported Mr. Breeze, saying that whilst new blood was desirable, it would be more effective if gradually admitted. Other minor alterations in the rules were brought forward and carried by Messrs. James Cocks, and J. G. Netting.

The following officers were elected:—President, Mr. Geo. Breeze, J.P.; Vice-Presidents: Messrs. Martin Johnson (Plymouth); F. Maitland (Stonehouse); Committee: Messrs. A. D. Breeze, W. H. Woods, and J. W. Weary, of Plymouth; Messrs. Swainson and Davey, of Devonport; Mr. O. A. Reade, of Stonehouse. Junior Section Committee: Messrs. E. A. Hodge, and J. A. Buckley (Sec.); Auditors: Messrs W. H. Austin, and S. A. Perkins; Treasurer. Mr. Condy U'Ren; Secretary: Mr. Jas., Cocks; Past-Presidents: *ex-officio* of Committees: Messrs. J. G. Netting, and C. J. Park.

Mr. J. Maurice introduced a discussion on C.A.M.W.A.L, and spoke at length of the advantages of having a depôt established at Plymouth. Several members spoke on the matter, which was finally referred to Mr. J. Maurice to negotiate with the company, and to be introduced at a future meeting of the members.—A deputation of the junior section expressed the desire of the juniors to have a proper reading and recreation room, to be furnished with games, papers, journals, etc., for the use of all members of the Association, and large

EXCHANGE—OFFERS AND WANTS.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Books, etc.

'The Home,' vol. I.; 'Hobbies,' vol. I.; 'Amateur Work,' vol. I. Offers wanted. 2s. 6d. worth books and magazines sent post free for 1s., good value.—Charles Mosley, Woodside Road, Lockwood.

Set of materia medica specimens as required for the Minor, over 200, each in separate envelope with botanical name, natural order, habitat, and active principles. What offers?—Picken, Newport, Shropshire.

A book of 130 Well-tried Recipes for Chemists and Druggists, comprising well-selected formulæ for general, remedial, veterinary, toilet, and everyday preparations. Post free, 1s. 6d.—Tully, Chemist, Hastings.

Fine copies, free. 'Pharmaceutical Journal' from commencement, 1842, 15 vols., bound, 20s.; Boag's 'Imperial Lexicon,' two thick vols., well bound, cost £2 unbound, 12s. 6d.—Davis, "Chestnuts," Gordon Hill, Enfield.

New, free, M'Alpine's 'Biological Atlas, Guide to Practical Study of Plants,' 423 coloured figures, 4s. (pub. 7s. 6d.); M'Alpine's 'Zoological Atlas,' 290 coloured figures, 9s. (pub. 18s.).—Davis, "Chestnuts," Gordon Hill, Enfield.

Proprietary Articles.

Counter-case, containing 14 dozen 1s. size Butcher's homœopathic medicines, for £1 8s.—Talbot, Salisbury.

Miscellaneous.

Fifty Microscope Slides, 2s. 6d. dozen, or 8s. 6d. lot; exchange.—Lintin, 170, Freedom Road, Sheffield.

Stock-taking.—Job lines to clear. 1½ doz. silk suspensory bandages, 8s. 6d. doz.; 1¼ doz. lady's chest expanding braces, 20s. doz.; natural wool felt chest and lung protectors, 2 doz. No. 3, 11s. 6d.; 3 doz. No. 4, 13s. 6d.; 2½ doz. No. 5, 17s. doz.; 2 doz. waterproof nursing aprons, 9s. doz.; 5 doz. silk eye shades (single), 1s. 10d. doz.; 7 round-shaped bedpans, 1s. 10d. each. Above are all new goods, not soiled; all or part, cash with order.—Frost, Beeston, Notts.

Hair Curler, like "Frizetta"; Balsam Aniseed, like "Powell's"; Gripe Water, like "Woodward's"; White Embrocation, like "Elliman's." Recipes 1s.; the lot 2s. 6d.; samples 4d.—Chemist, 4, Woronzow Terrace, St. John's Wood.

WANTED.

Urgently, present address of F. Thomas, late of Dudley, late of Chaddesley Corbett, and late of London; left Dudley on September 3 for situation in London.—Ince, Dudley, Worcester.

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enough to hold the meetings. Several seniors also agreed with the suggestion, and finally it was arranged to look out for a room and report at a future meeting.—The botanical prizes offered by Mr. C. J. Park and Mr. O. A. Reade were awarded as follows:—1st, Hellyer; 2nd, Downing; 3rd, Vibert; 4th, Reynolds; 5th, Sayer.

Mr. C. J. Park proposed a hearty vote of thanks to Mr. J. Cocks (Hon. Sec.), Mr. O. A. Reade, and other officers, for their past services. He spoke very highly of the great energy which they had put into their successful work, and had greatly added to the success of the Association. Mr. J. G. Netting seconded and endorsed all the remarks of the Chairman. Mr. Maitland supported the vote, which was carried unanimously. Mr. Cocks and Mr. Reade suitably replied. The Dinner Committee then sat, and the date of the dinner was fixed for October 14, at Devonport. The following gentlemen were elected on the Committee:—Messrs. G. Breeze (President). J. Cocks, Swainson, A. D. Breeze, Hodge, F. Maitland, C. J. Park, J. G. Netting (Treasurer), and M. Johnson (Secretary).

NEWS IN BRIEF.

Messrs. Bowers Brothers, printers and advertisement contractors, 89, Blackfriars Road, London, S.E., send specimens of attractive business circulars, which should supply useful hints to chemists and druggists as to the most effective way of bringing their business before the notice of the general public.

Sir Somers Vine has formally resigned his position as Assistant-Secretary of the Imperial Institute, and is about to transfer his energies to a large colonial commercial enterprise.

Mr. George Senter, pharmaceutical chemist (Bell Scholar, Pereira Medallist, etc.), enters the Edinburgh Central School of Chemistry and Pharmacy as Lecturer in Materia Medica and Botany, this month.

The Cork Chemical and Drug Company and Messrs. Smith and Sheppard, Dublin, have been appointed contractors to the Oughterard Board of Guardians for the supply of drugs and medical instruments respectively.

Messrs. Hunt and Co., chemists, Westland Row, Dublin, have been appointed drug contractors to the Bandon Union.

The Use of Marked Syphons.—Mr. David Evans, chemist and druggist, of Swansea, was summoned at the Swansea Police Court, under the Merchandise Marks Acts, for selling goods bearing a false description, namely syphons, bearing the name of Messrs. Belt, mineral water manufacturer, Swansea. For the defence, it was stated that the bottles were used inadvertently, having been exchanged by customers. A fine of 40*s.* and costs was inflicted.

A Wine Licence was applied for at the Falmouth Brewster Sessions on Monday, September 28, by Mr. J. Blamey, chemist and druggist. The application was opposed by the Falmouth Blue Ribbon Total Abstinence Association, but was granted on the understanding that the applicant intended simply to sell medicated wines.

Sweet Spirits of Nitre containing less "active principle" than required by the B.P., in consequence of being kept in stock too long, has caused the Buckley Main Street Co-operative Society, Ltd., to be fined 5*s.* and costs (in all £1 11*s.* 6*d.*).

LATE ADVERTISEMENT.

Partner Wanted.

WANTED.—An energetic Partner in an old and well-established manufacturing Chemical and Wholesale Drug Warehouse. Address, Wholesale, Queen's Hotel, Leeds.

Advertisements in the Pharmaceutical Journal.

All Advertisements must be sent to the Office, 5, Serle Street, Lincoln's Inn, W.C., where replies to prepaid advertisements may be addressed, and will be redirected free of charge. Postal Orders should be made payable at Lincoln's Inn, W.C., to Street Bros. Cheques should be crossed "London Joint Stock Bank."

Prepaid Advertisements.—Advertisements of Assistants Wanted, Apprenticeships, For Sale, Partnerships, Businesses for Disposal, Businesses Wanted, and Premises to Let are charged as follows:—Fifty words or less, 3*s.* 6*d.* Each additional ten words or less, 6*d.*

Advertisements of a general character are inserted at 4*s.* 6*d.* each for seven lines (50 words) or less, and each additional line of seven words, 6*d.*

☞ Free Advertisements.—Advertisements of Assistants seeking Engagements will be inserted Free of Charge, subject to conditions mentioned in each number of the Journal.

DIARY OF THE WEEK.

Secretaries of Societies are requested to send notices of forthcoming meetings not later than Wednesday in the previous week.

Monday, October 5.

School of Pharmacy, at 3 p.m.
Presentation of Prizes and Inaugural Address.

Tuesday, October 6.

Pharmaceutical Society.
Meetings of Committees.

Wednesday, October 7.

Pharmaceutical Society.
Council Meeting.
Brighton Junior Association of Pharmacy, President's Inaugural Address and Social and Musical Evening, at 9 p.m.

Thursday, October 8.

Chemists' Assistants' Association, at 8.30 p.m.
Inaugural Address by the President.
Sheffield School of Pharmacy.
Inaugural Address by Mr. David Storrar.

Market Report

And Prices Current of Drugs, Chemicals, Oils, and Seeds.

The quotations here given are in all cases the lowest net cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

[Specially Compiled for the 'Pharmaceutical Journal.']

LONDON REPORT.

London, October 8, 1896.

There has been a little better feeling in our markets this week, mainly owing to more enquiries by mail from America. This is due to a feeling that the sound currency candidate for the Presidency will be elected; but cable advices now seem to show that, after all, he will scarcely have a walk over, and should one or two of the doubtful States throw in their lot with his opponent, a long period of depression in financial and commercial circles may be looked for. We cannot, however, think it probable that the Silver party will gain the day. Quinine is steady with a fair demand, and there seems to be more confidence in the article at present price. Opium, morphia and codeia unchanged. Cocaine, little doing. Pilocarpine weak and likely to further recede. Orris dearer. Balsam tolu firmer. Castor oil firm, with a hardening tendency. Rape oil very firm at tangibly higher prices, with a good demand. Star aniseed oil lower. Shellac slightly dearer. Turpentine a shade easier, and Japan wax much dearer.

Acid, Acetic.—The prices of this article have been again reduced by the Convention as follows:—

Strength.	½-Ton and more.	4 Tons and more.*
28 per cent.	£13 5s. per ton.	£12 15s. per ton.
30 per cent. 1 to 7	14 — ,,	13 10s. ,,
33 per cent. P.B.	15 — ,,	14 5s. ,,
40 per cent.	17 5s. ,,	16 15s. ,,
50 per cent.	20 15s. ,,	20 — ,,
60 per cent.	24 5s. ,,	23 5s. ,,
70 per cent.	27 15s. ,,	23 10s. ,,
74 per cent.	29 5s. ,,	27 15s. ,,
80 per cent.	31 5s. ,,	29 15s. ,,
85 per cent.	33 — ,,	31 5s. ,,
90 per cent.	34 15s. ,,	33 — ,,
95 per cent.	36 10s. ,,	34 10s. ,,
98/100 per cent.	38 — ,,	36 5s. ,,

* Taken as required by buyers within the next twelve months in lots of not less than half-ton at a time.

Cash 14 days, less 2½ per cent. discount.
Free domicile London, Hull, or Goole.
Carboys of 132 lbs. net included, and £2 per ton acid (*i.e.*, 17 empty carboys) allowed for empty carboys when same are returned, in good order and condition, free at the place at which the acid was delivered.

These prices will come into force only for acid dispatched from the works after October 2, 1896.

In the event of the Convention reducing prices while a contract is running, sellers will allow buyers the reduction on undelivered portion as long as same is in force.

Acid, Carbolic.—In fair demand. Prices firm at late rates, viz., 34-35°, 6d. to 6¼d. per lb.; 39-40°, 6⅝d. to 6¾d.; for ice crystal; detached crystals, 39-40°, 7⅛d. to 7¾d. *Crude*, 60°, 1s. 9½d.; 75°, 2s. 1½d.; *liquid*, 95 per cent., slightly easie at 10½d. to 11d., according to quantity.

Acacia (Gum).—3715 packages of all descriptions were offered in to-day's auctions, but practically everything was bought in. *Turkey sorts* are held from 75s. to 85s. per cwt., according to quality, whilst the limits placed by shippers on the *East Indian* gums were very high. It is anticipated by holders of this latter variety that the unfavourable weather this season is bound to effect supplies next year.

Acid, Chrysophanic—Is a trifle easier, in view of the somewhat more liberal supply of raw material.

Acid, Citric.—Quiet at 1s. 1¾d. to 1s. 2d. per lb.

Acid, Oxalic.—The convention between the British and Continental makers has lately been renewed for three years, and the late reduced quotations for delivery over 1897 have now been withdrawn. Price for spot delivery continues unchanged at 3⅝d. per lb.

Acid, Tartaric—Is very dull, and whilst *English* makes are unchanged, a *foreign* brand, guaranteed B.P., is offering in half-ton lots at 1s. 1¼d. per lb.

Ammonia Compounds.—*Sulphate*: Quiet and rather easier; *grey* 24 per cent. *London*, £7 10s.; *Hull*, £7 10s.; *Leith*, £7 6s. 3d. to £7 7s. 6d.; *Beckton*, £7 7s. 6d. *Sal-ammoniac*, 37s. 6d. per cwt. for *firsts*, and 2s. less for *seconds*. *Carbonate*: 3d. per lb. in *casks* and 3¼d. per lb. in *jars*. *Copper sulphate* is quoted at £16 5s. to £17 10s. per ton, according to brand and package.

Araroba—Is more freely offered, and quality is rather better than seen of late, but prices asked are very high, viz., 5s. 6d. per lb. for fair but woody quality for the whole parcel, about 1 ton.

Areca Nuts.—It is said that 22s. 6d. per cwt. has been paid.

Assafœtida.—Business has been done this week up to 70s. per cwt. for fair purity block, and higher prices seem probable.

Arsenic.—Appears to be in little better supply.

Balsam, Tolu.—The stock of genuine is very scarce, and it is doubtful if any could be obtained now at less than 3s. 3d. per lb. *Canada* remains cheap at 1s. per lb. for casks, and 1s. 2d. per lb. for cases of 2 and 45-lb. tins.

Bleaching Powder—Is dull and slow of sale at unchanged prices, spot being £7 10s. per ton.

Camphor (Crude)—Remains very quiet, and privately no business has transpired. In auction 204 cases *China* offered and sold "without reserve"—for account of whom it may concern, with all faults, all more or less damaged by sea water—from 101s. to 110s. per cwt.

Camphor.—*Refined* remains practically unchanged demand, as is usual at this season of the year, not being at all active. *Crude* steady without important change.

Cantharides.—*Russian* are quoted 2s. per lb. from the other side.

Cascara Sagrada.—Quiet at 18s. 6d. per cwt. on the spot for good quality.

Chamomiles—Steady at 58s. to 60s. per cwt. for *Belgian*. German are quoted 65s. to 70s. per cwt.

Civet—Is in better supply, and holders are willing to take less money. Good quality is offered at 32s. 6d. to 37s. 6d. per oz.

Cloves.—In auction, 347 bales *Zanzibar* were all bought in at 2d. to 2¼d. per lb., also 61 bags *Amboyna* at 3¼d. to 3⅜d. per lb. 5 bags damaged sold at 2⅜d. per lb. Of 33 cases *Penang*, 6 cases good bright picked sold at 7d. per lb. Privately *Zanzibar* remains firm, closing, sellers, November-December delivery at 2⅝d., and January-March at 2⅝d. per lb.

Coal Tar Distillation Products.—*Benzole* and *toluol*: Unchanged. *Crude naphtha*: 30 per cent. at 120° C., dearer at 1s. 7d. per gallon. *Solvent naphtha*: 95 per cent. at 160° C., 1s. 8d.; 90 per cent., 1s. 6d.; 90 per cent. at 190° C., 1s. 2d. per gallon.

Cocoa Butter.—In auction on Tuesday, 350 cases block of Cadbury's make were sold at 12⅞d. to 13¼d. per lb., the average being fully 13⅛d. per lb. against 13⅜d. per lb. at the September sales. 140 cases of Taylor Brothers' were also offered and sold at 12⅞d. to 13¼d. per lb., closing at 12⅞d. per lb. 12 cases of *Dutch* bought in.

Cocaine.—Extremely quiet and without change.

Cod-Liver Oil.—In better demand. *Norwegian* is quoted from 160s. to 180s. per barrel according to brand. *Newfoundland* from 5s. to 6s. 3d., per gallon, according to quality.

Cream of Tartar is very quiet at somewhat easier prices. For good white *crystals* 85s. per cwt. is asked, and 86s. 6d. for good white *powder*.

Ergot of Rye.—Higher prices are now asked for new crop, and the opinion appears to be gaining ground that supply will hardly be excessive.

Galls.—*China* remain quiet without business, but prices are firm at 60s. per cwt. on the spot. *Turkish* steady, but without change.

Gentian Root—Remains scarce, lowest price being 23s. per cwt.

Ginger.—At auction on Wednesday only small supplies were offered. Of 225 bags rough *Cochin*, 120 bags rough lean small and ends sold at 24s., the balance, dull washed, bought in at 30s. per cwt.; 32 cases limed native sold steadily, low small and ends, partly cut, at 31s.; medium part cut at 48s. 6d. per cwt. 315 bags limed *Japan* bought in at 16s., and 5 barrels washed *Jamaica* also taken out at 100s. per cwt.

Glycerin.—Rather more inquiry for refined, with business in outside brands at 71s. per cwt., but leading makes are held firmly at 74s. to 75s. per cwt. The crude article is unchanged.

Guarana—Is cheaper, fine quality being offered at 2s. per lb.

Gum, Tragacanth.—A good demand exists, but the most desirable parcels are practically off the market, being held for very high rates. Quotations remain firm, *firsts*, £14 to £15; *seconds*, £12 10s. to £13 10s.; *thirds*, £11 to £12.

Honey—Is in fair demand. *Chilian*, 27s. 6d. to 37s. 6d. per cwt. for darkish to fine pale.

Insect Flowers—Market has considerably advanced; *half-closed* being now quoted 114s. per cwt.

Ipecacuanha.—A small business has been done this week at 5s. 11d. per lb. for fair root.

Kola Nuts.—At the spice auctions, 2 packages fair dried *Grenada* sold at 4½d. to 5d. per lb.

Menthol.—The low price recently asked for forward delivery appears to be attracting the attention of purchasers, but it is doubtful whether orders can still be placed at the lowest rates lately reported.

Mercurials.—Makers have made no alteration in price.

Morphia and Codeia.—Unchanged.

Oils (Essential).—*Lemon* unchanged at 3s. 7d. per lb. for old and 3s. 6d. per lb. for new crop, December to June shipment. *Bergamot* lower at 6s. 9d. for spot and 6s. 6d. for new crop. *Sweet Orange* easier at 5s. per lb. for spot and 4s. 8d. per lb. for new crop. *Star Aniseed*: This market is quiet, and prices are rather easier. On spot small sales have been made at 9s. 6d. per lb., whilst for arrival there are sellers at 7s. 9d., *c.i.f.* terms, August to October steamer. *Cassia*: Steady, but little business doing. Spot sales have been made at 6s. per lb. for 50 per cent. *Patchouly*: Quiet at 1s. 11d. to 2s. per oz. for English. *Cloves*: Neglected at about late rates. *Oil of Peppermint* remains low in value, and does not seem likely to be dearer just yet. *H.G.H.* quoted 7s. 6d. per lb. on the spot; *Wayne County* 6s. per lb. on the spot, and 5s. per lb. to arrive. *Oil Spearmint* cheaper, 6s. 6d. being quoted for tins, *c.i.f.* terms. *H.G.H.* in bottles, 9s. per lb., *c.i.f.* terms.

Oils (Fixed).—*Castor oil:* East Indian *firsts*, 4⅜d. per lb., *seconds*, 2¾d. per lb. has advanced, 32s. 6d. per cwt. *c.i.f.* being now quoted. *Cotton* firmer. Refined spot £16 to £16 10s., according to make and package. *Cocoanut* very firm. *Ceylon* on spot is quoted £23 10s. to £24. *Cochin* £28. *Linseed* steady, but practically unchanged in value. *Rape* strong and advancing, with good demand. Refined £27 to £27 10s. for spot. *Palm oil* has considerably improved. There are buyers of *Lagos* on the spot at £26.

Opium.—Quiet, very little doing.

Orris Root.—New crop *Florentine* is again dearer at 71s. to 72s. per cwt. for *selected*, and 67s. per cwt. for *sorts*. *Verona* of new crop 60s. per cwt. for picked, and 56s. per cwt. for *sorts*, all *c.i.f.* terms. Prices are still advancing.

Pilocarpine—Is offering more freely, and lower prices would probably be accepted for good quantities. Stocks of *Jaborandi leaves* continue to accumulate, and buyers are holding off in anticipation of a sharp decline in values.

Potash Compounds.—*Chlorate* continues dull, with pressing second-hand sellers; spot price, 4¼d. per lb., and 4⅛d. per lb. for quantities *f.o.b.* Liverpool. For delivery over next year 4d. per lb. is quoted, but in the face of the Swedish competition buyers hold back. *Permanganate*: Demand has been quiet this week, but for spot delivery the article remains scarce. *Bicarbonate* is quoted 30s. to 31s. per cwt., as to quantity. *Oxalate, neutral*: 4⅞d. to 5d. per lb. *Cyanide*, 98 to 100 per cent., is quoted 1s. 1½d. per lb. for large lots, and 30 per cent., 7½d. per lb. *Yellow Prussiate*: 6½d. per lb. *Bichromate*: 4⅞d. to 5d.

Quicksilver.—Steady but unchanged at £6 12s. 6d. per flask from first hand, and a trifle less from second hand.

Quillai Bark.—Stocks in Liverpool much reduced, and prices firmer at £14 per ton in that city, and £15 per ton spot London.

Quinine Sulphate.—Stocks have been reduced by over 100,000 ozs. during last month. A good business has been done at 11d. per oz. from second hands in bulk, and market closes quiet with buyers at anything under 11d. per oz.

Rose Leaves.—*Dutch* are lower at 1s. 3d. per lb.

Saffron—Is firmer, holders asking about 1s. per lb. more than late rates.

Santonine—Quiet but firm, the principal

MONTHLY STATEMENT OF DRUGS, ETC., WAREHOUSED IN LONDON.

October 1, 1896.

		September.		Stocks, September 30.	
		Arrivals.	Deliveries.	1896.	1895.
Aloes (all kinds)	packages	476	263	4,443	5,117
Balsams ,,	,,	28	32	752	1,477
Bark, Cinchona	,,	1,086	932	24,865	29,073
Quinine Sulphate	ounces	—	109,564	1,476,064	2,092,976
Beeswax	packages	379	281	2,058	3,084
Camphor	,,	484	719	11,496	16,202
Cardamoms	,,	218	112	532	1,155
Cochineal	,,	306	199	1,719	1,606
Colombo Root	,,	—	188	113	1,041
Cubebs	,,	11	—	331	553
Dragon's Blood	,,	6	32	108	258
Galls	,,	298	189	9,875	6,626
Gum, Ammoniacum	,,	—	3	44	153
Arabic, all kinds	,,	1,135	1,295	15,338	12,571
Asafœtida	,,	—	26	486	846
Benjamin	,,	506	382	2,848	2,198
Galbanum	,,	—	—	1	2
Gamboge	,,	41	4	212	180
Guaiacum	,,	—	1	57	79
Kino	,,	11	4	28	18
Mastic	,,	—	2	10	14
Myrrh	,,	9	29	667	443
Olibanum	,,	134	239	3,796	3,727
Tragacanth	,,	144	497	4,087	3,835
Ipecacuanha	,,	17	23	448	669
Jalap	,,	—	4	374	268
Nux Vomica	,,	—	20	705	1,515
Oils, Castor	,,	124	266	1,019	1,592
Olive	,,	68	193	1,083	583
Aniseed	,,	14	35	37	168
Cassia	,,	—	—	20	33
Rhubarb	,,	156	59	492	1,024
Saltpetre	tons	733	1,103	4,421	2,599
Sarsaparilla	packages	75	65	306	333
Senna	,,	2,035	829	2,374	1,829
Shellac	,,	857	4,497	40,184	25,650
Terra Japonica, Gambier	tons	660	466	1,057	574
Cutch	,,	70	153	1,886	2,067
Turmeric	,,	15	70	1,080	1,367

These stocks of camphor, oils of cassia and aniseed, are incomplete, some warehouses not making returns.

makers quote 5s. 9½d. to 6s. per lb., according to quantity.

Scammony.—*Virgin* in better supply, and *firsts* are quoted 30s. per lb.; *seconds* 19s. to 25s. per lb. *Roots*: Quiet at 30s. per cwt. *Resin* quotations are somewhat irregular.

Senega Root—Is dearer, 1s. 2½d. to 1s. 3d. per lb. being now asked for spot, according to holder.

Shellac.—The fair supplies at auction on Tuesday met with active competition at an advance of 2s. to 3s. per cwt. on last sale rates, *TN* fetching 82s. to 83s. per cwt. Of a total of 638 cases offered, 598 cases sold. *Fine Orange* bought in at 105s.; *Fine Second Orange* sold at from 88s. to 92s. per cwt., according to brand. *TN Orange*: 342 chses of this grade sold, partly without reserve, more or less cakey and blocky, ordinary red to good bright at 76s. to 82s., ordinary red free at 79s. per cwt.

Soda Compounds.—*Soda crystals*: Quiet at 43s. 6d. per ton ex ship, gross weight. *Bicarbonate*: 98·99 per cent., £7 10s. per ton. *Soda caustic*: 60 per cent., £8; 70 cent., £8 10s. *Hyposulphite*: £6 15s. per ton.

Spermaceti.—This is dearer at 1s. 5d. per lb., and American advices point to still higher prices.

Spices (Various).—*Cassia lignea* remains firm, although quiet, with small sales at 36s. per cwt. *Pimento* continues quiet, but steady. At auction 251 bags were offered, and about 200 bags sold at 2¼d. per lb. for middling. *Capsicums*, 35 bales *East India* small round red and brownish bought in at 18s. per cwt.; 15 cases *Japan* sold at 26s. 6d. to 27s. 6d. per cwt. for long thin red off-stalk. *Chillies* very quiet and dull of sale, the whole of the offerings being bought in at 37s. to 48s. per cwt. for brownish to bright red *Zanzibar*. *White pepper*.—Privately the demand is very slow, and at auction the whole of the offerings were bought in, limed *Penang* at 3⅜d. per lb., and good fair *Singapore* at 4⅛d. per lb.

Strychina.—In good demand at 1s. 11d. to 2s. per oz. according to quantity, for *pure crys.* and *powder* 1d. per oz. less.

Sugar of Milk—Is offering at 72s. 6d. to 75s. for powder, according to brand and quantity; crystal (grapes) higher in proportion. American *powder* of fine white quality offers at 70s. per cwt. for quality; a second quality is quoted 10s. per cwt. lower.

Tartar.—First white cream is nominal on the spot, with sellers at 90s. per cwt.

Terra Japonica.—*Cutch* quiet. At auction, of 836 boxes offered only 200 boxes "without reserve" sold; inferior block at 13s. to 14s. 6d.; and common slabs at 8s. 3d. to 8s. 6d. per cwt. *Gambia* quiet but steady, whole bales on spot 15s., and for arrival 14s. 9d. to 14s. 10½d. per cwt. Cubes unchanged. The shipments of *Cutch* from *Rangoon* from January 1 to October 3, to all parts were 7440 tons, against 7036 tons in 1895, and 8830 tons in 1894.

Turpentine.—The late rise in this article is due to resolutions having been passed by the producers and dealers in the Southern States of America (whence the chief supplies of turpentine come) to the effect that the coming season should begin on December 15 and last only to February 15 1897, thus reducing the output, it is, expected, to the extent of 100,000 barrels. Last year's output is said to have been about 480,000 barrels, whilst the world's consumption is estimated at 440,000 barrels. Prices close, however, rather easier at 20s. 3d. per cwt. on the spot, and 20s. 4½d. per cwt. November to December shipments.

Vanillin—Has been reduced to 13s. 6d. per oz.

Wax (Japan)—Is much dearer with transactions, it is reported, at 52s. 6d. per cwt. for spot and further buyers thereat. For arrival, October to December steamer, there are sellers at 41s. per cwt., *c.i.f.* terms.

NEWCASTLE REPORT.

October 6, 1896.

The general market is lapsing into dulness. *Sulphur* keeps scarce, and late figures are maintained in consequence. Prices are:—*Soda crystals*, 37s. 6d. to 45s.; *caustic*, 70 per cent., £7 10s.; 76-77 per cent., £9 to £9 5s.; *sulphur*, £4 15s.; *bleaching powder*, £6 10s. to £7 10s., according to markets; *soda ash*, 48 per cent., £4 12s. 6d. to £4 15s.; *alkali*, 48 per cent., £4 15s.; *hypo-sulphate*, £6 5s. to £7; *South Durham salt*, 9s.

MANCHESTER REPORT.

October 6, 1896.

While export business is reported dull, a fair amount is passing on contract for next year. Although in our last a rather low figure was named for 58 per cent. *Ammonia Alkali*, it is now pretty certain that no agreement has been arrived at by the principal producers, and it is stated that the price of £3 7s. 6d. will in all probability remain in force until the end of the present year. For forward over 1897, 70 per cent. *white caustic soda* ranges from £6 17s. 6d. to £7 5s. per ton on rails, and *Bleaching powder* £6 5s. to £6 10s. per ton, according to delivery. *Recovered sulphur* is somewhat dearer, ranging from £4 17s. 6d. to £5. *Acetates of lime* also tend upward, and are about 2s. 6d. per tondearer. *Sulphate of ammonia* is very low for prompt delivery. As low as £7 7s. 6d. is stated to have been accepted at Leith, but the current figure may be taken at £7 8s. 9d., while £7 12s. 6d. is the price for delivery January to June. *Sulphate of copper* is fairly firm at £16 to £16 5s. for best brands, delivered Manchester. *Chlorate of potash* in rather better inquiry, though price (4¼d.) is low. *Naphthas* are dull, and *Benzols* slightly easier. *Epsom salts* 55s. to 57s. 6d. per ton bags; *Glaubers*, 25s. to 27s. 6d. per ton. *Carbolic acid* a trifle firmer.

LIVERPOOL REPORT.

October 7, 1896.

Beeswax.—10 ballots of *Gambia* at £6 15s. per cwt.

Bichromate of Potash.—4⅝d. per lb.

Bicarbonate of Soda.—£6 15s. per ton.

Borax.—18s.; powder, 19s. per cwt.

Carbonate of Ammonia.—3d. per lb.

Canary Seed—Is in good demand, and the price of *Turkish* has advanced since last week to 33s. 6d. per 464 lbs. for good. The sales are 2000 bags "poor" at 28s.; "fair," 30s. 6d. to 31s.; good, 32s. to 33s. 6d. per 464 lbs., all *Turkish*.

Caustic Soda.—70 per cent., £7 5s. to £7 10s. per ton; 60 per cent., £6 5s. to £6 10s.

Chlorate of Potash.—4¼d. per lb.

Chillies.—100 bags of *Niger* fruit made 13s. per cwt.

Copperas: *Lancashire*, 38s.; *Welsh*, 35s. per ton.

Cream of Tartar.—Quiet and nominal at 90s. per cwt.

Honey.—A little *Californian* sold at 22s. 6d. per cwt.

Hyposulphite of Soda.—£5 10s. per ton.

Linseed.—In consequence of small stock on hand is very firm, and holders ask high prices, 500 bags of *Turkish* have sold ex quay, at 32s. per 416 lbs.

Kola Nuts.—Small quantities of dried have sold at 2½d. per lb.

Nitrate of Soda.—7s. 10½d. to 8s. 1½d. per cwt.

Oils (Fixed) and Spirits.—*Castor* of all descriptions is firm, the price of *French* being nominal, due to small compass of stock. *Calcutta* "good seconds," 2¾d. per lb.; *Madras*, 2¾d.; *French* 1st pressure, 2⅝d. to 2¾d.; *Belgian*, 2½d. to 2⅝d. *Olive* has improved in demand. Prices remain firm, and good sales of *Spanish* are reported. *Malaga*: £29 10s. to £30 per tun; *Seville*, £28 10s. to £29 10s.; and *Syrian*, £27 to £28 per tun. *Linseed*: Liverpool makes have advanced 3d. to 6d. per cwt.; 17s. 3d. to 18s. 6d. per cwt. *Cottonseed* still remains, as last week, very firm, with Liverpool *refined* at 16s. to 16s. 6d. per cwt., and *American* 16s. 6d. *Spirit of Turpentine* has advanced to 21s. 6d. per cwt., at which price demand is fair. *Palm* is high in price, and the amount offering is small. *Lagos* has been sold recently at £24 per ton.

Pearlash.—35s. per cwt.

Potashes.—20s. per cwt.

Prussiate of Potash.—7d. per lb.

Sal Ammoniac.—37s. and 35s. per cwt.

Saltpetre.—23s. per cwt.

Soda Crystals.—£2 7s. 6d. per ton.

Sulphate of Copper.—£16 per ton.

Sulphate of Ammonia.—£7 18s. 9d. per ton.

Tragacanth.—Sales of good Hog gum have been made at 47s. 6d. per cwt. store.

Who Introduced Quinine into America?—Some discussion is being carried on in America as to who first introduced quinine into that country. Mr. Edward L. Milhau, writing to the *Shipping List*, under date New York, September 17, says:—"My father, John Milhau, who unquestionably did introduce quinine, was born in Baltimore in 1796—just one century ago. It was while in business there that he received his first half ounce, costing at the rate of $40 per ounce. He was in communication with chemists and scientists in Paris, whose acquaintance he had made when he went there for business and study in 1816. I have had the privilege of knowing the sons of some of those famous lights, and a number of my father's contemporaries, who have since passed away, who were in a position to know. All conceded that it was he that had introduced quinine. The fact of his priority is of little importance, but, under the circumstances, in my opinion, incontrovertible."

EXCHANGE—OFFERS AND WANTS.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Miscellaneous.

To Minor Students. A bargain. Southall's Materia Medica Cabinet complete, almost equal to new, listed £2 5s.; for sale, £1. carriage paid.—A. H. C., c/o Messrs. Cosway and Rutter, High Road, Kilburn, N.W.

Platinum Crucible, half ounce, for sale.—Write Bisset, 39, Market Street, Aberdeen.

One hundred plain "London-made" syphons, second-hand, in perfect order, equal to new, surplus stock, at 1s. 3d. each.—Sample sent carriage paid, on receipt of 18 stamps, to—"Waters," care of Bond, 9, Lawton Street, Newcastle-on-Tyne.

Hair Curler, like "Frizetta"; Balsam Aniseed, like "Powell's"; Gripe Water, like "Woodward's"; White Embrocation, like "Elliman's." Recipes 1s.; the lot 2s. 6d.; samples 4d.—Chemist, 4, Woronzow Terrace, St. John's Wood.

Two gross each 30 and 60 gr. glycerin suppositories, 3s. 6d. and 4s. per gross; 1 gross each belladonna, iodoform, and tannin suppositories, 4s. 6d. per gross; half gross each iodoform, belladonna, tannin bougies, 5s per half gross, all post free.—Rogers, Chemist, Llanelly.

Pill-machinery, Niblett's patents, send for catalogue; two 80-gall. strong copper steam-jacketed pans; also various other pans, etc.; can be seen at the works of Messrs. Bennett, Sons and Shears (Limited), 167, Kingsland Road, N.E.

OFFERED—(*continued*).

Petroleum emulsion, white, permanent, palatable, improves by keeping, in use three years; formula, 1s. 6d.—Sumner, Chemist, Burnley Road, Reedley, Burnley, Lancs.

Formulæ.

A well-tried and reliable Recipe for Horse-Blister, post free, 2s.—Vet., 16, Conway Place, Harehills Road, Leeds.

Books, etc.

'Science Siftings,' volume x., just out, 2s.; Squire's 'Companion,' last edition, 3s. 6d.; McAulay's 'Dictionary of Medicine,' 2s. 6d. Post free, one or all, on receipt of cash; splendid offers.—Ault, Alfreton.

Ellis's 'Demonstrations of Anatomy' (Thane), 241 engravings, 12s. 6d., for 6s.; Holden's 'Human Osteology,' 61 lithographic plates, 89 engravings, 16s., for 6s. Each second—last edition.—Innes, 46, Clerk Street, Edinburgh.

Free, as new, Milton's 'Gonorrhœa and Spermatorrhœa,' 2 vols. (16s.), 7s. 6d.; Thudichum's 'Complete Guide Analysis of Urine' (15s.), 7s. 6d.; Neubauer and Vogel's ditto, 5s.—Davis, "Chestnuts," Gordon Hill, Enfield.

OFFERED—(*continued*).

New, free, M'Alpine's 'Biological Atlas, Guide to Practical Study of Plants,' 423 coloured figures, 4s. (pub. 7s. 6d.); M'Alpine's 'Zoological Atlas,' 290 coloured figures, 9s. (pub. 18s.).—Davis, "Chestnuts," Gordon Hill, Enfield.

Books, must sell, overstocked:—Edmund's 'Botany'; Thorpe's 'Quantitative Analysis'; (Prescripta,' 'Guide to Prescription Reading,' 120 autograph prescriptions with key; all Wills'); Bayley's 'Pharmacist's Pocket-Book,' (new).—Hogg, York Street, Belfast.

A book of 130 Well-tried Recipes for Chemists and Druggists, comprising well-selected formulæ for general, remedial, veterinary, toilet, and everyday preparations. Post free, 1s. 6d.—Tully, Chemist, Hastings.

Shop Fittings, etc.

Set mahogany drawers, 16 ft. long, 97 drawers, spaces for medicine bottles; two carboys, 5 gallons; tabloid desk; marble-top soda-water stand; mahogany desk with glass-case front.—W. Heffer, Fitzroy Street, Cambridge.

WANTED.

B. and C. D. Diary for 1896, must be clean. Price to—F. Neal, 14, Queen's Road, Watford.

NEWS IN BRIEF.

The North of England School of Pharmacy, Newcastle-on-Tyne, conducted by Mr. G. F. Merson, Ph.C., M.P.S., was greatly damaged by fire on Saturday, October 3. Almost the entire contents of the laboratory were destroyed, while the contents of the lecture rooms and museum were badly damaged. The loss is partly covered by insurance, and Mr. Merson's classes are being conducted as usual in a large hall adjoining the school, where temporary benches, etc., have been erected.

Edinburgh Pharmacy Athletic Club: Golfing Section.—The final round of the T. and H. Smith and Co. Challenge Trophy competition took place on Friday, October 2, on the Braid Hills course, when Messrs. Adams and Murdoch beat Messrs. Lunan and Alexander by 4 up and 2 to go. These teams having won the Trophy once each, tied for the Gold Charms on Monday, October 5, when Messrs. Lunan and Alexander were the winners by 7 up and 6 to go. The golfing season will be brought to a close on October 30 and 31, when the Dick Handicap Challenge Medal will be played for.

The Chemists' Assistants' Association holds its annual Smoking Concert at the Frascati Restaurant, Oxford Street, W., on Thursday, October 15, 1896. Mr. T. H. W. Idris, J.P., L.C.C., is expected to take the Chair, and Mr. John C. Umney, the Vice-Chair. The proceedings will commence at 8 p.m., and tickets (One Shilling each) are obtainable from all members of the Council, or from Mr. E. W. Hill, 143, New Bond St.

Mr. Walter Smith, demonstrator in chemistry at the Edinburgh Central School of Pharmacy, has been presented by the students with a silver mounted walking stick and a handsome case of Loewe pipes on the occasion of his leaving the school to fill an appointment in Nottingham.

Dr. John Attfield, F.R.S., late Professor of Practical Chemistry to the Pharmaceutical Society, now continues his professional practice at 111, Temple Chambers, London, E.C.

Messrs. Raimes and Co., wholesale druggists, of York, have just completed the purchase of a fine mansion in Micklegate, which was built about 1750, and became the town house of the historic Bourchier family. It will provide the firm with ample room to enlarge and improve its various departments, and considerable additions and alterations are being made, which will include largely-increased provision for the "liquid" department, extensive laboratories for general and analytical work, commodious offices, etc.

Röntgen Work in Surgery, both cryptoscopic and photographic, has for some time past been undertaken for surgeons by Mr. F. H. Clew, radiographer and chemist, 156, Clapham Road, London, S.W., and he is now prepared to undertake cryptoscopy and rapid radiography in all its branches.

The Annual Dinner of the Westminster College of Pharmacy has been fixed for Friday, December 4, at the Holborn Restaurant, to be followed by a Cinderella in the King's Hall. The occasion being the coming of age of Miss Georgina Wills, ladies will be invited to the dinner.

Chloral, taken to induce sleep, caused the death of Mr. W. F. Caldwell, of Tullyclover, Armagh, last week, an overdose having been taken.

A New Limited Company.—It is stated that Dr. J. S. Ward, L.P.S.I., Lisburn, is about to convert his business into a limited company.

DIARY OF THE WEEK.

Secretaries of Societies are requested to send notices of forthcoming meetings not later than Wednesday in the previous week.

Tuesday, October 13.

Royal Photographic Society, at 8 p.m.
The President's Annual Address (Ordinary Meeting).

Wednesday, October 14.

Midland Chemists' Assistants' Association, at 9 p.m.
Discussion: "How to Arrive at Dispensing Charges" (R. D. Gibbs).

Thursday, October 15.

Chemists' Assistants' Association, at 8.30 p.m.
Smoking Concert, Frascati Restaurant.

LATE ADVERTISEMENT.

Business for Disposal.

£1700 Returns.—Staffordshire.—Old-established Retail and Local Wholesale. In same hands 30 years, and now for sale through death of proprietor. Position good, and up-to-date man would find this a good opportunity. Valuation of stock and fixtures will be accepted. Executor, "Pharm. Journal" Office, 5, Serle St., London, W.C.

« Market Report »

And Prices Current of Drugs, Chemicals, Oils, and Seeds.

The quotations here given are in all cases the lowest net cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

[Specially Compiled for the 'Pharmaceutical Journal.']

LONDON REPORT.

London, October 15, 1896.

The past week while it has shown a distinct improvement in demand for drugs and chemicals from the United States, has as far as home trade is concerned suffered under the influence of the very unpropitious weather. There are practically no very great changes in prices to report. Atropine is tangibly dearer, as also are croton seeds and borax, with smaller advances in saffron, or at least firmer prices, benzoin, ipecacuanha, vanilla, and cardamoms, morphine, codeine, and quinine steady, but without change. The same applies to glycerin. Pilocarpine lower, and expected to further recede. Turpentine advancing. Camphor, foreign makers have brought their prices up to level of English refiners, which would seem to point to higher prices, especially as the crude appears to be scarce and very firmly held.

Acid Boracic.—Following the advance in borax, prices have been raised £2 per ton, to £30 for crystals, and £32 per ton for powder, discount and falling clause being the same as for borax. Makers outside the Convention, however, continue to offer at £1 per ton below above rates.

Acid, Carbolic.—Nothing fresh to report.

Acid Chrysophanic—Is offered at lower prices from the Continent.

Acid Citric.—Unchanged at 1s. 1¾d. to 1s. 2d. per lb.

Acid Tartaric.—Very quiet. *English*, 1s. 2d.; *Foreign*, 1s. 1d. per lb.

Alcohol.—*German Potato Spirit* is again lower, the ordinary druggists' quality being quoted 6¾d. per proof gallon landed in bond.

Aloes.—A considerable quantity, viz., about 420 packages, were up in sale, of which 122 boxes *Cnracoa*, without reserve, fetched 13s. to 24s. per cwt. *Cape* sold at 22s. 6d. per cwt. for good hard bright down to 17s. for lower quality.

Araroba.—The lot mentioned in our last analyses about 50 per cent., but the high price asked prevents business.

Areca Nuts.—In sale 94 bags were chiefly sold at from 14s. 6d. to 15s. 6d. per cwt.

Ammonia Compounds.—*Sulphate.*—Very flat. Gray prompt 24 per cent., London, £7 10s.; Hull, £7 7s. 6d. to £7 8s. 9d.; Beckton, £7 5s. *Sal ammoniac* unchanged at 37s. per cwt. for *firsts*, and 35s. per cwt. for *seconds*. *Carbonate*, 3d. per lb. in *casks*, and 3¼d. per lb. in *jars*.

Asafœtida.—There are several inquiries from America this week, but we have not heard that any business has so far resulted.

Atropine.—Makers have advanced their prices considerably. *Sulphate* is quoted 9s. 8d. to 9s. 10d., according to quantity; *pure*, 12s. to 12s. 3d. per oz.

Belladonna Root—Is very scarce, and will probably be dearer. Price is nominally 36s. per cwt.

Benzoin.—*Sumatra* of good quality sold well at higher prices, £8 5s. per cwt. being paid for good white bold almondy, well packed. *Siam*: Bold free almonds held for £17 10s.; good clean small, part friable, blocky, bulk free, sold at a higher price, £8 5s., whilst dark blocky seed sold 47s. to 95s. per cwt. *Penang*: Fair glassy sold 60s. to 72s. 6d. per cwt. *Palembang*: Only part sold previous to sales, at prices which did not transpire.

Bleaching Powder.—Quiet and unchanged at £7 10s. per ton.

Borax.—The Convention of Manufacturers met in London on the 8th inst., and raised the price to £20 per ton for *crystals*, and £21 per ton for powder. For contracts the following discount is allowed:—

For at least 5 tons	.. ..	1 per cent.
„ 25 „	.. ..	2 „
„ 50 „	.. ..	3 „

To be taken at buyers' option, in lots of 5 cwt. or more at a time up to the end of 1896.

On contracts as above a falling clause is granted on undelivered portions of the contracts.

Buchu Leaves — In sale, yellowish rounds were bought in at 2¼d. per lb., and good green at 3d.

Camphor (Crude)—Is in active demand for the Continent, but so far no business has resulted, owing to firmness of holders, who ask 130s. per cwt. for *Japan*, and 125s. per cwt. for *China*, with sales of latter at that price. In sale 3 packages sold cheaply at 105s. per cwt.

Camphor (Refined).—*English* continues very firm, whilst *German* has been advanced to 1s. 7d. per lb. for lots of 5 cwt. or more, 1s. 6½d. per lb. for 10 cwt. and over, and 1s. 6d. per lb. for not less than 1 ton on contract for delivery October to December this year, these being also still the prices asked by English refiners.

Cardamoms.—The moderate quantity offered met with good demand at various prices, according to quality. Seeds were sold at 3s. 4d., which is about 1d. per lb cheaper than previously.

Castor Oil.—For 30 cases *East India seconds* 2⅞d. per lb. was refused, in sale price being 3d.

Chamomiles.—*Belgian* are quoted 57s. 6d. to 60s. per cwt.

Cinchona Bark.—The supplies at the auctions on Tuesday, whilst larger than last month, were moderate, being 1881 packages of all descriptions, as against 1288 packages at the preceding sales. The East India *Officinalis* bark met with an excellent demand at steady prices, and for all descriptions the unit value remains about steady. *Ceylon*: Of 420 packages offered, 394 bales sold. *Succirubra*, stem chips at 1⅛d. per lb. *Officinalis*, stem chips and shavings, fair to good at 1½d. to 2⅜d. per lb., renewed, ½d. to 3⅛d. per lb. *Quill*: Good renewed at 3d. to 3⅛d. per lb.; natural thin, 1¾d. per lb. *Ledger*: Ordinary natural shavings at 1d. to 1⅛d. per lb. *Java*: Of 317 bales offered only 7 sold at 1⅝d. to 2⅝d. per lb. *South American*: 102 bales *Bolivian* cultivated Calisaya quill offered, and sold at 3⅛d. to 3¾d. per lb. *Cuprea* of old import sold in part at ½d. to ⅞d. per lb. *African*: 209 bales offered and sold, fair quill at 2½d. to 3d., and broken at 2⅛d. to 2¼d. per lb. Shipments from Java continue enormous, cable advices stating total for Septemb r to be 1,389,000 Amsterdam lbs., and from January 1 to September 30, 7,418,000 as against 5,829,700 lbs. in 1895.

Cinchonidine—The article has lately been in active demand, and price has advanced to 4½d. to 5d. per oz. for *Sulphate*. Makers are in some instances unable to supply, or only in limited quantity.

Cloves—Privately *Zanzibar* are in more demand at rather steadier prices, a fair business having been done, about 1000 bales in all positions, including spot at $2\frac{3}{32}$d. to 2⅛d. per lb. for fair, according to prompt November to January delivery at $2\frac{5}{32}$d., and January to March at $2\frac{5}{32}$d. per lb. At the auctions on Wednesday only 99 bales *Zanzibar* offered and bought in at 2⅛d. per lb. *Penang* remain dull, and of

57 cases offered only 2 cases good bright picked sold at 7⅝d. to 7¾d. per lb.

Codeine—Quiet but steady at late prices.

Cod-Liver Oil.—Finest *Lofoten* is quoted 175s. for best brands. In sale 23 casks *Newfoundland* were bought in at 5s. to 6s. per gallon. Part of this oil was *à la Norwegian*, but was by no means bright in appearance, owing, it is said, to the water not having been fully separated from same.

Colocynth —In sale *Turkey* sold very cheaply at 2s. 5d. per lb.; fine *Spanish* held for 1s.

Copper Sulphate.—£16 to £16 5s. per ton, according to brand.

Cream of Tartar.—Rather firmer, but quotations unchanged at 85s. per cwt. for first white *crystals*, and 87s. per cwt. for *powder*.

Croton Seeds.—Very much dearer, and the two parcels offered in sale met with a spirited competition, selling at from 72s. to 77s. per cwt. These high prices are due to the approach of the rainy season, but will probably lead to further shipments.

Dragon's Blood.—In sale 4 cases fetched £5 to £8, according to quality.

Ergot of Rye.—In sale very wormy *Spanish* sold at 3¼d. per lb. ; good bold *Russian* taken out at the somewhat absurd price of 1s. per lb.

Gamboge.—36 cases were bought in without price being mentioned.

Gentian Root.—In sale 7 bales fetched 23s. per cwt.

Ginger.—At auction, of 703 bags *Cochin*, rough kinds, only 280 bags sold, mainly "without reserve," low shrivelled brown pickings at 24s. 6d. ; cuttings, 23s. to 24s. 6d. ; low dusty ditto, 13s. per cwt. Of 317 cases cut sorts about 160 cases sold ; ends, 33s. ; native small and ends limed, partly cut, 34s. ; medium and small, partly cut, 41s. to 42s. ; B., good cut, 76s. to 76s. 6d. per cwt. ; 276 bags limed *Japan* bought in at 16s. : 10 barrels old fine washed *Jamaica* bought in at 140s. per cwt.

Gum Guaiacum.—10 cases very drossy sold at 3d. per lb.

Honey—Practically unchanged, in sale 29 cases *New Zealand* were taken out at 26s. per cwt., highest bid being 21s.

Ipecacuanha.—Demand continues good at somewhat higher prices, stocks being reduced. Of about 50 packages in sale part sold at 5s. 9d. to 6s. per lb. for fair to good *Rio*. Remainder bought in at about 6s., although rather less would no doubt be accepted rather than miss business.

Kamala.—Five cases bought in at 10d.

Kola Nuts—Fetched in sale from 3½d. to 7¾d. per lb., according to quality.

Kousso.—Loose flowers, sample of which arrived only just before the sale, were taken in, a bid of 10d. per lb. being refused, value being about 1s. 5d. to 1s. 6d. per lb.

Liquorice Root.—*Decort.* very scarce at 30s. to 35s. per cwt.

Lithia Salts.—Prices are firm at 8s. 11d. to 9s. 6d. per lb., according to quantity for *carbonate*, and 5s. 9d. to 6s. for *citrate* powder, and *citrate cryst.* 3d. per lb. less.

Menthol—Lower at 8s. to 8s. 3d. per lb. on the spot, and 6s. 6d. per lb. for arrival.

Morphine — Unchanged, with only a limited business doing.

Musk.—Small to thin-skinned blue pods were sold without mention of price.

Nux Vomica—Sold in sale at 5s. 6d. for fair dull.

Oils (Essential).—*Star aniseed*: Weaker at 9s. per lb. on the spot ; September to October steamer, 7s. 6d. per lb., sellers, and October to December steamer, 7s. 1½d. per lb., *c.i.f.* terms. *Lemon* : Lower ; Probably 3s. per lb. would now be accepted for new crop, *c.i.f.* terms. *Cassia* tending higher, 70 to 75 per cent., 7s. 9d. per lb. *Citronella*, unchanged, 1s. 2d. per lb. *Eucalyptus* : *Globulus* held for 2s. per lb. ; fair ordinary, 1s. to 1s. 2d. per lb. *Peppermint* : 10 cases of *Japanese*, dementholised. *Kobayashi* brand held for 3s. 6d. per lb.

Oils (Fixed).—*Amygd. dulc.* : English has been reduced 1d. per lb. to 1s. per lb., and the *Persic.* to 9d. per lb *Linseed* : Quiet and rather easier. *Rape* : Firm ; refined, on spot £28. *Cotton* : Very firm ; refined, on spot, £16 10s. to £17, according to make and package.

Opium.—Advices from Smyrna point to higher prices, and Constantinople receipts are distinctly smaller than this time last year. America is buying both in Smyrna and on this market, but the chief holders are very firm. Here the market has been quiet, with very little doing.

Pilocarpine. — Price is distinctly weak, and tending lower, cheaper offers coming in from various Continental makers. It appears probable that value will now gradually recede to something like the old level.

Orris Root.—It is reported that 72s. 6d. has been paid for good *Florentine* on the spot.

Podophyllin Resin.—Quotations vary according to maker ; as much as 9s. 9d. per lb. is quoted by some makers for B.P. quality for good quantity, but less would be taken by others.

Potash Salts.—*Chlorate* weaker at 4⅛d. per lb. on the spot, and 4d. per lb. in quantities, *f.o.b.*, Liverpool. *Bichromate*, 4¾d. per lb., being unchanged. *Prussiate* : *English*, 6½d. per lb. ; *Beckton*, 6d. per lb. *Permanganate* : Market remains steady with sales on the spot at 77s. 6d. to 80s. per cwt., ready supplies being still very scarce.

Quicksilver—Firm, but unchanged at £6 12s. 6d. per bottle from first hands, and 6d. less from second hands.

Quinine.—A very quiet market, with but a small business in *B.* and *S*, and *Brunswick* at 11d. per oz. In the sales 4000 ozs. "Dubosc" brand, to which we alluded a fortnight ago, and which in the meantime had been analysed by Dr. B. H. Paul, was offered, and bought in at 11d. per oz.

Rhubarb.—Of 180 packages offered, part sold. 30 cases rough, horny *high-dried*, which for some time has been scarce, realised 7d. to 7¼d., and 6½d. to 6¾d. for very stalky. So-called new *Canton* lately arrived, but which from its wormy appearance is hardly this year's crop, sold somewhat cheaper at 10d. to 1s. 1d. per lb., according to grading. Good bold *Shensi* part rough, half pinky, half dark, part sold at 1s. 7d. ; rest bought in at 2s., but somewhat less would no doubt be accepted. Good round slightly wormy sold at 1s. 9d. to 1s. 10d. per lb. Good bold *Canton*, even pinky and grey, bought in at 1s. 6d., medium at 1s. 1d., good bold flat at 1s. 3d. per lb. Medium round *Canton*, rather wormy, without reserve, fetched 8d. to 9d. per lb.

Saffron.—This article has been rising rapidly this week, as it becomes more evident that owing to the wet weather a very small crop will be available this season. Quotations range from 29s. 6d. per lb. for *Valencia* of commercial quality, to 35s. for the finest grade. Decidedly higher prices are anticipated.

Senna.—About 570 bales *Tinnevelly* were offered, the selection being slightly better on the average than for some time past ; for these greener lots a strong competition resulted in higher prices up to 4d. for medium leaves of good colour. No bold leaves offered.

Senna (Alexandrian). — Privately 11 cases whole leaf of medium colour have been sold this week at 9d. per lb., whole leaf of good colour being held for 1s. 2d. per lb. ; broken leaf 8d., and siftings at 5d. per lb. Pods are quiet at 5d. to 7d. per lb.

Shellac.—At the weekly auctions on Tuesday good supplies were offered and demand was strong, the greater proportion being sold at rather irregular rates, closing at a fraction below last sale prices. Out of a total of 1067 cases, 627 cases sold. *Fine Orange* was all bought in, good pale R in octagon at 97s. per cwt. *Fine Second Orange* : Good bright part hard block sold at 83s. to 84s. ; ditto flint block at 82s. per cwt. *TN Orange* : Out of 573 cases offered 431 sold, strong curly pale matted at 85s., good bright free 83s. to 84s , ordinary to red fair ditto at 78s. to 80s., broken flat red at 76s., more or less cakey and blocky, curly bright red at 77s. to 80s. Privately only a limited business has been done this week, buyers supplying their requirements at the sales. For arrival the market is unchanged, and no business has been done.

Soda Compounds.—*Soda crystals*, 42s. 6d. per ton, *ex* ship gross weight. *Bicarbonate* easier at £7 5s. per ton, spot. *Caustic*, 70 per cent., white, £8 ; 60 per cent., £7 per ton.

Spice (Various).—*Chillies* remain dull, and all lots bought in. *Zanzibar* ordinary at 38s. per cwt. ; bright red *Japan* at 55s. per cwt. *Capsicums* : 28 cases long thin red *Japan* off stalk bought in at 26s. to 27s. per cwt. *Cassia vera* : 163 packages of *Pedang* coarse quill bought in at 23s. per cwt. *Cinnamon chips* : Of 399 bags only 60 bags of common coarse *Ceylon* sold at 3d. per lb. *Nutmegs* : Small supplies went off steadily. Of 45 cases *Penang* 15 cases sold 66's at 2s. 11d., 69's at 2s. 8d., 81's at 1s. 10d., 83's at 1s. 8d., 109's and 110's at 1s. 2d. per lb. ; *West Indian* 99's ordinary mixed with long at 1s. 2d. per lb. *Mace* : Quiet but steady, fine bold heavy bright palish *Penang* 2s. 7d. down to 1s. 2d. per lb. for pickings. *Bom-*

bay sold at low prices, good bright palish 2¾d., middling bright red 2⅜d. per lb. *Pepper* of all kinds continues quiet.

Star Aniseed.—38 packages *Japan* part mouldy sold at 10s. to 12s. per cwt., and 14 cases *China* at 9s. 6d.

Sugar of Milk.—Unchanged at last quotations. It is, however, expected that prices will now rather advance than recede.

Terra Japonica.—*Cutch* continues quiet, in auction 309 boxes offered and sold chiefly without reserve; block, 14s. to 15s. per cwt.; inferior slabs, 10s. 6d.; and fair, 20s. 6d. to 23s. 6d. per cwt. *Gambier*: The market for arrival is weaker, with sales of 100 ton, October to December steamer, at 14s. 6d., and November to January at 14s. 9d. per cwt.

Turmeric—Is in slow demand, and supplies at auction were all bought in.

Turpentine.—Strong, and advancing with an active demand. *American*, on spot, 21s. 3d. to 21s. 6d. per cwt.; November to December, 21s. 6d.; January to April, 22s. 3d. per cwt.

Vanilla.—*Bourbon*, chiefly of foxy character, sold at dearer rates to 21s., 5 to 5½ inches. *Seychelles* of new crop were mostly of good quality, selling at full rates up to 27s. 6d. for 7½ to 8 inches.

Vanillin.—Lowest price for 100-ozs. lots is 12s. 9d. per oz.

Wax (Japan)—Is quiet and distant shipment is rather easier, a small business only having been done at 40s. 6d. per cwt., *c.i.f.* terms, for October to November steamer.

Wood Oil.—In sale 7 packages were bought in, there being no bid.

LIVERPOOL REPORT.

October 14, 1896.

Bleaching Powder.—£7 per ton.
Bicarbonate of Soda.—£7 per ton.
Bichromate of Potash.—4⅝d. per lb.
Borax.—18s. per cwt.; *Powder*, 19s.
Canary Seed—Is flat, held for 32s. per 464 lbs. on the spot, but 30s. has been accepted for forward delivery.
Caustic Soda.—70 per cent., £7 10s. per ton; 60 per cent., £6 10s.
Chlorate of Potash.—4¼d. per lb.
Copperas.—38s. *Lancashire*, 35s. per ton *Welsh*.
Cream of Tartar.—Demand very slack, the price 90s. per cwt. is only nominal.
Honey.—*Chilian* varieties are in good demand, and sales include *Pile* 2 at 20s. 6d. per cwt.; *Pile* 1, 21s. 6d. to 22s. 6d.; *Pile* X, 25s. to 30s.; about 400 barrels in all have been disposed of.
Linseed—Is very firm, with not much offering. 2000 bags of *River Plate* were sold at 31s. per 416 lbs.
Nitrate of Soda.—7s. 10½d. to 8s. 1½d. per cwt.
Oils (Fixed) and Spirits.—*Castor oil* is steady at 3d. per lb. for *Calcutta*, *French*, or *Madras*. *Olive oil* seems from all reports likely to advance in price. The sales have been mostly of *Seville* at £28 10s. per tun, *Malaga* at £29 10s., *Candia* £30. For shipment *Gallipoli* has sold at £31 10s., *Gioja* £29, and *Messina* oil £28 7s. 6d. to £30. *Linseed oil*: 17s. 9d. to 18s. 6d. per cwt., Liverpool pressed. *Cottonseed oil*: 17s. to 17s. 6d. per cwt. for *Liverpool* refined; *American*, 18s. *Spirits of Turpentine* firm at 22s. per cwt.
Sal Ammoniac.—37s. and 35s. per cwt.
Sulphate of Copper.—£16 5s. per ton.
Potashes.—21s. 6d. per cwt.
Pearlash.—35s. per cwt.
Prussiate of Potash.—7¼d. per lb.
Soda Crystals.—£2 10s. per ton.

NEWCASTLE REPORT.

October 13, 1896.

This market during the week has again moved slowly. So far signs of an immediate improvement are few. However, prices are maintained on "Union" lines. Quotations are:—*Bleaching powder*, £6 10s. to £7 10s, according to destination; *soda crystals*, 37s. 6d. to 45s.; *caustic soda*, 70 per cent., £7 to £7 10s.; *soda ash*, 52 per cent., £4 5s.; *alkali*, 52 per cent., £5; *sulphur*, £4 15s. per ton *f.o.b.*

MANCHESTER REPORT.

October 14, 1896.

Altogether there is a decidedly better feeling, and there is in many respects an upward tendency in miscellaneous chemicals. There is, however, no change in the prices of *Alkalies* and *Bleaching Powder*, but it is reported that a fair business is being done for delivery over next year. *Salt cake* has improved slightly, and for forward delivery varies from 20s. to 22s. per ton on rails. *Recovered Sulphur* is steady at £4 10s. to £4 15s. per ton. *Chlorates* generally tend downwards, but *Bichromate* is higher and varies from 4⅞d. to 5d. *Sulphate of Ammonia* depressed, and as low as £7 7s. 6d. accepted at Leith. *Acetate of Lime* improving, and brown about 5s. per ton higher for *Welsh*. *Green Copperas* firm, but unchanged. *Sulphate of Copper* £16 10s. per ton for best brands, delivered Manchester. *Naphthas* tend downwards, and colourless white (best) quoted 3s. 1d.; miscible, 2s. 8d. to 2s. 10d. *Benzols* unchanged. *Pitch* dull, and *Manganese* unchanged. *Acids* easier. *Aniline Oil* and *Salts* firm. *Yellow Prussiate* is firmly held for best local makes at 7d. to 7¼d.; foreign and inferior as low as 6d.

THE DECLINE IN CASTOR OIL.

Another indication has been given that all is not harmony among manufacturers of castor oil. The break to 9c. per lb. for prime quality on September 1 was followed by another decline of ½c. last Tuesday. It is true that the crop of castor beans is larger than usual, and that the price is lower, but it is not believed that supplies are sufficient to meet all the wants of domestic makers. The crop of beans has not been equal to consumptive demands for many years, and manufacturers on the seacoast have found it to their advantage to go abroad for the bulk of their supplies, as the freight from the West on domestic beans is an important item of cost. The duty is 25c. per bushel, the previous rate being 50c. The situation will be better understood by giving some statistics.

The importations of beans at New York for the periods mentioned, have been as follows:—

1895.	Bushels.	Value. Dols.
January to March	73,067	57,747
April to June	23,067	18,149
July to September	22,396	17,168
October to Dec. 31	22,339	16,785
Total 1895	141,044	109,849
Total 1894	47,488	41,931
1896.	Bushels.	Value.
January to March	45,512	36,025
April to June	7,997	6,801
July to Sept. 1	15,650	13,828
Total eight months	69,159	56,654

The importations of castor oil tell a different story, and although there is a tariff duty of 35c. per gallon, the receipts of foreign oil continue to be recorded. During the calendar year of 1895 the imports of oil at New York were 24,141 gallons, valued at $9406, the great bulk of which was placed in bond awaiting export. From January 1 to September 1 this year the New York arrivals aggregate 12,841 gallons, worth $5689. The foreign competition has not been regarded as important, and the figures indicate a less volume of trade. Manufacturers are more concerned about their domestic relations, and the two declines apparently show a lack of harmony. The lower price of seed would not be sufficient reason for a decline of 1c. per lb. in the value of oil.—From the *New York Price Current*.

MARRIAGE.

Green—Padwick.—At Great Malvern on October 13, Charles Pratt Green to Eleanor Emily Padwick.

NEWS IN BRIEF.

The Edinburgh Pharmacy Athletic Club swimming races held throughout the summer having resulted in two competitors securing an equal number of points, a special race was held on Friday, October 9, to decide who should be the winner of the prize presented by Messrs. Burroughs, Wellcome and Co. As anticipated, a close race was witnessed, victory ultimately resting with the scratch man, A. G. Paterson, who won by a foot from G. H. C. Rowland, who had three seconds start. The Club Medal goes to Mr. Rowland.

Mr. William Burley, 137, George Street, has purchased the retail business of Messrs. James Robertson and Co., 35, George Street, Edinburgh.

Mr. James Spilsbury, F.I.C., F.C.S., who recently (under negotiations for partnership) had charge of the laboratories and drug mills of Messrs. J. Woolley, Sons, and Co., of Manchester, has now joined the firm of Messrs. Blackwell, Hayes, and Co., manufacturing pharmaceutical chemists, of Birmingham, and in future the style of the firm will be Blackwell, Hayes, and Spilsbury.

An Irish Pharmaceutical Professor Shipwrecked.—Professor Henry Dixon, while yachting with a friend lately off Howth, had a very unpleasant experience and a narrow escape from death, the little vessel having foundered. The Professor has been suffering for some days from the effects of the wetting, but is now recovering.

EXCHANGE—OFFERS AND WANTS.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Miscellaneous.

A book of 130 Well-tried Recipes for Chemists and Druggists, comprising well-selected formulæ for general, remedial, veterinary, toilet, and everyday preparations. Post free, 1s. 6d.—Tully, Chemist, Hastings.

Dobson's famous black-leg drinks; 6 5s. 6d. and 24 3s. sizes; as new; take half-price.—Powell, Chemist, Fairford.

Pill-machinery, Niblett's patents, send for catalogue; two 80-gall strong copper steam-jacketed pans; also various other pans, etc., for sale cheap. Can be seen at the works of Messrs. Bennett, Sons and Shears (Limited), 167, Kingsland Road, N.E. Manufacturers of every description of chemical plant, established 100 years,

Weiss Galvanic Battery, 30 cells, quite new, in mahogany case, £3 10s.; also Weiss Portable Faradic Battery, £2 2s.—Farthing, Chemist, Spennymoor.

Dental Instruments, lowest price, or exchange with Major books (new) or quinine wine.—Dean, Desborough, Market Harborough.

White-covered Pots, 5 gross, 2-oz. size, extra large, suitable for toothpaste, shaving cream, etc., Staffordshire made; offers requested for all or any.—Address, Ellis, 61, Brudenell Road, Leeds.

OFFERED—(*continued*).

Tanks, 40, 50, 80 gallons each, 15s. 20s. 25s. 6d.; nearest offers; sound, good condition, brass taps.—Harston, Burton Road, Lincoln.

Shop Fittings, etc.

Set mahogany drawers, 16 ft. long, 97 drawers, spaces for medicine bottles; two carboys, 5 gallons; tabloid desk; mahogany desk with glass-case front.—W. Heffer, Fitzroy Street, Cambridge.

Books, etc.

New, free, M'Alpine's 'Biological Atlas, Guide to Practical Study of Plants,' 423 coloured figures, 4s. (pub. 7s. 6d.); M'Alpine's 'Zoological Atlas,' 290 coloured figures, 9s. (pub. 18s.).—Davis, "Chestnuts," Gordon Hill, Enfield.

'Pharmaceutical Journal,' 1892 and 1893, two numbers missing of 1893. What offers?—W. A. Scott, Stranton Terrace, West Hartlepool.

Free, as new, Milton's 'Gonorrhœa and Spermatorrhœa,' 2 vols. (16s.), 7s. 6d.; Thudichum's 'Complete Guide Analysis of Urine' (15s.), 7s. 6d.; Neubauer and Vogel's ditto, 5s.—Davis, "Chestnuts," Gordon Hill, Enfield

Keating's 'Dictionary of Medical Terms and Scientific Terminology,' 18s., for 9s. 6d.; Holden's 'Human Osteology,' 61 lithographic plates, 89 engravings, 16s., for 6s. Second—last edition. Innes, 46, Clerk Street, Edinburgh.

OFFERED—(*continued*).

Sale or exchange, Squire's 'Companion' (1890), Chemistrys:—Roscoe, Jago, Thorpe's 'Metals'; Jones' 'Practical'; Thome's 'Botany': Wills' 'Flowers and Fruits.' What offers?—F. Pilkington-Sargeant, Pharmaceutical Chemist, Chorley.

Proprietary Articles.

What offers for quantity of Dobson's black-leg drinks?—Suttie, Chemist, Cambuslang.

WANTED.

Year-books of Pharmacy for 1870, 1886, 1891, 1892; also Proceedings of British Pharmaceutical Conference for 1864, 1866, 1867, or complete set for the six years, 1864-1869 inclusive.—Editor, 17, Bloomsbury Square, W.C.

Wanted, the following books for the Major: Green's or Prantl and Vine's 'Botany,' Thorpe's 'Chemistry,' parts 1 and 2 (latest edition), Ganot's 'Physics' or some standard work, a standard work on Organic Chemistry, and Southall's 'Materia Medica.'—Apply to Johnson, 90, Western Road, Brighton.

Dental Lathe, vulcanizer, flasks, dental sundries, and outside show case, in good condition, for cash.—A. Higgs, Chemist, Kingston-on-Thames.

Cocaine Poisoning was supposed to have caused the death of Harold Ramshaw, 25, a student at the South London School of Pharmacy. An inquiry was held on Tuesday, October 6, at the Lambeth Coroner's Court, when it transpired that the deceased had been in the habit of taking cocaine to relieve toothache, and death was attributed to an accidental overdose, but the Coroner regarded this idea as inconsistent with the evidence, so he adjourned the inquiry to allow of the matter being thoroughly cleared up. At the adjourned inquiry, Dr. F. Womack (public analyst) stated that death was due to strychnine poisoning. He found no indications of cocaine.

Methylated Spirit, complains a correspondent of the *Pall Mall Gazette*, cannot be procured for use in a sickroom after ten o'clock on Saturday night. He went recently to a chemist's and also a chandler's, but was informed that its sale was not permitted by law until Monday morning, and he is dissatisfied accordingly, as members of the British public are apt to be when some restriction affects them directly.

Spirits of Salts for Whisky proved fatal in the case of Josiah James, an army pensioner, aged 57 years, of Camberwell, who had been drinking heavily since he drew his last quarter's pension, and drank a quantity of the acid in mistake for the less potent spirit.

Mr. Councillor Fitz Hugh, J.P., who has long been established as a chemist in Nottingham, is referred to in some appreciative lines, accompanied by his portrait, in the October number of the *Nottingham Library Bulletin*. Mr. Fitz Hugh is the Vice Chairman of the Public Library Committee, and Chairman of the Watch Committee.

Messrs. Perken, Son and Rayment's lease of the premises of their Oxford Street branch having lapsed by effluxion of time, all business will be transacted from their headquarters, 99, Hatton Garden, Holborn Viaduct, E.C.

Alcohol in "Temperance Drinks," so called, brought nine Leeds shopkeepers before the Stipendiary on October 7, charged with having sold beer without a licence. Analyses of ginger beer showed it to contain in some cases 4, 5-10 per cent. of alcohol, and in others 4, 7-10 of proof spirit. Several samples contained spirit in quantities varying from 3 to 5 per cent. Each defendant was fined 4*s*. (or three days). In five cases the fines were remitted on account of poverty.

Sir William Harcourt, says the *Newcastle Daily Chronicle*, seems inclined to take a few of his metaphors from the British Pharmacopœia, and has gone to drugs for his similes, and, apparently, like most beginners in pharmacy, has got into trouble amongst the incompatibles. "Constant doses of morphine and colchicum, he has been telling the electors of Rhymney, give temporary relief but ruin the constitution. Surely, this is an extraordinary prediction. Morphine may give temporary relief, but we had always understood that the immediate effects of a dose of colchicum were unpleasant rather than relieving. And, certainly, one ought not to liken the results of a dose of colchicum to the closure."

Mr. J. R. Young, of Messrs. J. F. Macfarlan and Co., has suffered a great loss by the sudden death of his wife, at 38, Chalmers Street, Edinburgh, on the 9th inst. Mr. and Mrs. Young celebrated their golden wedding about two months ago.

DIARY OF THE WEEK.

Secretaries of Societies are requested to send notices of forthcoming meetings not later than Wednesday in the previous week.

Tuesday, October 20.

Royal Photographic Society, at 8 p.m.
"Half-Tone Direct from Nature," by Wm. Gamble.

Wednesday, October 21.

Brighton Junior Association of Pharmacy, at 9 p.m.
Social and Musical Evening. Chairman, A. P. Nosworthy.

Midland Chemists' Assistants' Association, at 9 p.m.
"Old Pharmacy," by F. Casson.

Western Chemists' Association (of London), at 8.30 p.m.
Annual Meeting and Election of Committee.

Royal Microscopical Society, at 8 p.m.
Papers by Messrs. J. Butterworth, T. Comber, and E. M. Nelson.

Thursday, October 22.

Liverpool Chemists' Association, at 7 p.m.
General Meeting, and Papers by Messrs. P. H. Marsden, H. Wyatt, and T. H. Wardleworth.

Chemists' Assistants' Association.
"Wax Analysis," by R. F. Guyer.

LATE ADVERTISEMENT.

Assistant Wanted.

QUALIFIED Assistant. West-end. 3 kept. Full particulars, with photo, to F. W. D., care of Messrs. Horner & Sons, Mitre Sq., E.C.

« Market Report »

And Prices Current of Drugs, Chemicals, Oils, and Seeds.

The quotations here given are in all cases the lowest net cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

[Specially Compiled for the 'Pharmaceutical Journal.']

LONDON REPORT.

London, October 22, 1896.

The present week has not shown any very greatly increased activity in the drug and chemical markets. The depressing weather, combined with the somewhat dubious political outlook, having tended to check business. On the other hand the idea appears to be gaining ground that the low rates still ruling for some articles would warrant purchases, in fact that the long hoped for and now at last, so far, partly actually existing, improvement in trade can only tend to higher prices for such articles which have apparently been unduly depressed in value and which have not, hitherto shared, so fully at least, in any advance which has otherwise taken place. Moreover, some of the makers themselves appear at last to have arrived at the conclusion that a continuance of reckless competition and of needless and undue spoiling of prices, while it scarcely benefits anyone, is also hardly conducive to their own true interests. The event of the week has been the sudden very considerable reduction, by the combined makers, in prices of Acid and Soda salicylate. This reduction, which probably means entire loss of profit to the manufacturer, is directed against the outside makers and their supporters, it now remains to be seen what effect it will have. An important improvement has taken place in star aniseed oil, several Chinese houses having cleared the market of all parcels offering at 8s. 3d. to 8s. 6d. per lb., 9s. has been paid, and holders now ask 9s. 3d. per lb. Cassia oil is also strong, and closes at higher rates. Menthol is tangibly dearer, both for spot and forward. Linseed has been an excited market, and both the crushed product and the oil are quoted higher. Castor oil still advancing. Eucalyptus oil is strong in view of the approach of the season of the year when an increased consumption may be expected. Prices of oxalic acid and salts have been slightly advanced by the combined makers. Senega root is dearer, and spermaceti has also been advanced. Jalap root is in distinctly better demand, and the turn appears to have come at last. Saffron is still on the rise, and higher prices are confidently looked for. Chlorate of potash is somewhat lower. Shellac was the turn dearer in this week's sales. Quinine dull, with a slightly downward tendency. Opium, morphia, and codeia quiet, and without change. Orris root dearer for shipment; spot very steady. Acid citric a trifle lower. Camphor continues firm; the English refiners have, however, so far made no response to the advance in the foreign article, which lately took place. Crude is very firmly held. Ergot of rye is tending higher. Glycerin, refined dull, the anticipated winter demand not having yet set in. At the varnish gum sales to day competition was good, resulting in higher prices. The expected advance in bank-rate to 4 per cent. took place to-day.

Acid Chrysophanic — Is not quite so firm, British makers ask 21s. 6d. to 22s. per lb., but would probably accept somewhat less rather than miss orders. There are cheaper offers from the Continent, it is, however, stated that quality and appearance do not compare favourably with the British article, which possibly accounts for the lower price of 18s. 6d. to 19s. which is quoted.

Acid (Carbolic)—Is in good demand, and stocks are said to be small. One maker has advanced his price to 6½d. per lb. for 34-35° *ice crystal* in 2½ cwt. drums, 39-40° in proportion, while *detached crystals* 39-40° are quoted 7¾d. to 8d. per lb. for quantity and bulk packing. It is stated that a continued demand from Germany has caused the advance. *Crude*, on the other hand, is reported slightly easier at 1s. 9½d. per gal. for 60° and 2s. 1½d. for 75°. *Liquid*: 95 per cent. is quoted at 11d. per gal.

Acid, Citric.—Lower at 1s. 1½d. to 1s. 1¾d. per lb. for *crystals* on the spot.

Acid Oxalic.—The price of this article has been raised by the convention from 3⅝d., at which it has stood for some time past, to 3¾d. per lb., this price being for quantities of less that one ton; for one ton in a single delivery the price is 3⅞d. per lb., and for five ton lots in two equal deliveries, 3½d. per lb. net. For *powder* ½d. per lb. more. For *Sal Acetosella* and *oxalate of potash*, the prices are in each case 1¼d. per lb. more than the above, and for *Sal Acetos* in *powder*, ¼d. per lb. extra.

Acid, Salicylic, and Soda, Salicylic.—This afternoon it became known quite suddenly, and somewhat unexpectedly, that the combined makers had reduced their prices very considerably, viz., to 1s. 4d. per lb. nett for 1 ton lots, bulk packing, for acid *powder*, 1s. 6d. for *crystal*, and 3s. 6d. per lb. for the *physiologically pure*. Soda, to 1s. 6d. per lb. for *powder*, 2s. for *crystals*, and 3s. 4d. for *physiologically pure*. These prices show a reduction of more than 25 per cent. on those previously ruling.

Acid, Tartaric—Quiet, best brand of *English* being quoted 1s. 2d. to 1s. 2½d. per lb., while *foreign* is obtainable at a penny less.

Ammonia Compounds.—*Sulphate*, quiet; grey prompt, 24 per cent., London, £7 7s. 6d.; Beckton terms, £7 2s. 6d. per ton. *Carbonate*: Unchanged.

Bleaching Powder.—Steady at £7 10s. per ton on the spot.

Atropine—Is steady at late advance, the article being practically in the hands of three makers, who have agreed as to the price. A few hundred ounces have been quietly bought up this week, at prices somewhat below those now asked by the makers, from sellers who bought before the rise and who were wishful to secure a profit. Looking at the scarcity of good raw material, it would appear possible that price of atropine may be still further advanced ere long.

Camphor—Remains firm, with a moderate business in *crude* at rather dearer prices, including 200 piculs *China*, October shipment, at 107s. 6d. per cwt. *Japan*, October to December steamer, closing buyers at 113s. per cwt., *c.i.f* terms, with sellers at 116s. per cwt. Spot sales of *China* at 125s. per cwt. It is said that the highprices asked for arrival are due to bear sales at low prices falling due. *Refined*: Strong but unchanged.

Caraway Seed.—*Dutch* seed quiet at 25s. per cwt.

Chamomiles.—Somewhat easier, this year's crop being quoted 34s. 6d. to 60s. per cwt. as to quality, whilst last year's growth can be had at 44s. 6d. per cwt. for fine.

Cloves.—Privately the market for *Zanzibar* is very firm, and a small business has been done, including 500 bales on the spot at 2⅛d. to 2 d. per lb., and 700 bales Nov.-

Jan. delivery at 2 7/32d., and Jan.-March at 2 11/32d. per lb. In auction only 215 bales *Zanzibar* were offered, but the whole was bought in; 3 cases *Penang* good sold at 7d. per lb.

Coal Tar Distillation Products.—The following prices are now asked:—*Toluol*, 2s. 2d. per gal.; *Benzole*, 50 per cent., 3s. 3d.; 90 per cent., 4s. 6d. per gal. *Crude naphtha*, 30 per cent. at 120° C., 1s. 6d. per gal. *Solvent naphtha*, 95 per cent. at 160° C., 1s. 7d.; 90 per cent. at 160° C, 1s. 5d.; 90 per cent. at 190° C., 1s. 2d. per gal.

Cod Liver Oil—Is quiet but steady, best *Norwegian* being quoted 170s. to 180s. per barrel according to brand, second quality, 160s.; for Newfoundland, non congealing, 6s. 3d. per gal. has been paid.

Copper Sulphate.—£16 to £16 15s. per ton on the spot, according to brand and packing.

Cream of Tartar—Is slightly easier, 86s. 6d. per cwt. being quoted for *powder*.

Ergot of Rye.—Good sound *Russian* is steady at 6½d. per lb. Prospects of this article are towards higher values. Sound *Spanish* 11d. per lb.

Ginger.—The demand at auction on Wednesday was very slack. Of 476 bags rough, 275 bags sold at irregular prices, part without reserve, chiefly; very low dusty cuttings at 10s. to 10s. 6d. per cwt., low shrivelled 10s. 6d. to 12s. 6d., medium and small washed rough 29s. to 31s. per cwt. Of 260 cases cut, 60 cases sold at fairly firm rates, medium and small limed native cut 41s., good B cut 74s. 6d. to 76s., fine bold 85s. per cwt. Of 207 bags limed *Japan*, 156 bags sold, good plump 18s. 6d. per cwt.

Glycerin.—The demand for the chemically pure is slack, and prices are just a shade easier. The prices of the best brands are firm at 72s. to 74s. per cwt., but outside makes are quoted 70s. per cwt. for 1·260° in tins and cases.

Insect Flowers—Are steady, but *powder* is slightly lower at 9d. to 1s. 1d. per lb., according to quality.

Jalap—Seems to have taken a turn for the better. It is doubtful if any good root could now be got below 7d. per lb., and higher prices are looked for.

Manna.—New crop is quoted 2s. 10d. per lb. for *selected*, 1s. 5d. for *broken*, and 1s. per lb. for *sorts*, all *f.o.b.* shipping port.

Menthol—Has been lower on the spot, sales in quantity having taken place this week at 7s. 6d. per lb., but no more can be obtained at this figure, 8s. to 8s. 3d. per lb. being now asked. For arrival the market is dearer, 7s. per lb. *c.i.f.* terms being the nearest quotation.

Mercurials — Steady, but without change.

Oils (Essential).—*Star Aniseed* is in better demand, and the market on the spot closes firmer. Sales at 8s. 4½d. to 8s. 6d. per lb., but the market has been quietly cleared, and 9s. per lb. has been paid, 9s. 3d. being now asked. For arrival October to December steamer, there are sellers at 6s. 6d. per lb. *c.i.f.* *Cinnamon* good oil scarce and wanted. *Cassia* is strong, and a good business has been done at higher rates. Sellers now quote 8s. 6d. per lb. for 70 to 75 per cent, 7s. 6d. per lb. for 65 to 70 per cent., whilst lower grades are quoted 7s. per lb. *Eucalyptus* in active demand, with good sales of *Globulus* at 2s. to 2s. 2d. per lb., according to quantity. *Peppermint*: *H. G. H.* is dearer at 7s. 9d. per lb. *Japan dementholised*: 4s. per lb. is the spot quotation, whilst for arrival 3s. 4½d. per lb. is asked; 40 per cent. is firm at 5s. per lb. on the spot.

Oils (fixed) and Spirits.—*Linseed* has advanced, and the market closes very firm at £17 5s. for pipes, £17 15s. for barrels. *Rape* very firm at £26 10s. for ordinary brown in casks or barrels. *Cotton* firm at £17 to £18 for refined on the spot. *Cocoanut* steady. *Ceylon* on the spot, in pipes, £24s. 10s., and *Cochin* on spot, £28 10s. to £29. *Castor*: *Italian* has further advanced to 38s. per cwt, *c.i.f.*, and higher prices are considered probable, it being stated that sound seed is scarce. *Palm*: £26 for *Lagos* on spot. *Petroleum spirit*: *American*, 8¾d. to 9d., with *deodorised* at 9d. to 9¼d. per gallon. *Turpentine* closes quiet; *American* on the spot, 21s. 4½d.; November-December, 21s. 6d.; January-April, 22s.; May-December, 22s. 6d. per cwt. *Petroleum oil* quiet; *American* on spot, 5⅞d.; *Russian*, 5½d. per gallon.

Orris Root—Is reported from Italy to be advancing, selected *Florentine* being quoted 70s. per cwt., *c.i.f.* terms, for delivery in October to November; *sorts*, 61s. 6d. to 63s. per cwt., whilst picked *Verona* is 57s. per cwt., same terms. 45s. has been paid for *Mogador*.

Potash Compounds.—*Chlorate* is lower, 4d. per lb. being now quoted for spot London, whilst for shipment *f.o.b.*, Liverpool, this price could be shaded. *Bichromate*: Unchanged at 4¾d. per lb. *Prussiate*: Steady at 6½d. per lb. for English. *Permanganate*: Price remains steady, but there seems to be rather more available for early delivery.

Quicksilver—Is firm at £6 12s. 6d. from first hand.

Quinine—Has been a very quiet market this week, and prices closed a shade lower at 10¾d. to 10⅞d. per oz.

Roots—Are generally firmer, *Belladonna* being exceedingly scarce, except for inferior quality, which is quoted 35s. per cwt., while for really good root, if obtainable at all, 45s. would probably have to be paid. *Dandelion* is also very scarce, owing to the unfavourable weather, and it is difficult to get a quotation for good quality. *Colchicum*: Both *root* and *seeds* are tending dearer.

Saffron.—The advance continues, stocks are said to be small, and it is anticipated that higher prices will rule for the new crop, which will not be available before latter part of next month.

Santonine. — Tha combined makers maintain their price, it is said however that there has been a little offering from second-hand at slightly lower rates.

Sarsparilla.—1s. 11d. per lb. has been paid for *Jamaica*.

Senega Root—Is dearer at 1s. 4d. per lb. for good *Minnesota*.

Shellac.—Supplies at auction on Tuesday were small, chiefly fair *second orange*, which sold well at an advance of from 1s. to 2s. per cwt. A total of 261 cases offered, of which 206 cases sold. *Second orange*: of 217 cases, 191 sold, partly without reserve; good bright free, slightly broken, at 82s.; fair bright red, little matted at 81s. to 82s.; strong red free at 81s.; fair bright curly cakey at 78s.; ordinary red at 77s.; common livery at 74s. per cwt. Privately the demand continues, with fair sales at steady prices. For arrival there is little disposition to do business, but prices are steady, importers quoting 78s. per cwt. for *TN*, November-January shipment. At the close, however, 100 cases have been sold at 77s. 6d., *c.i.f.* The demand is mainly for Continental and American account. The shipments to the United Kingdom from Calcutta during the first half of this month were 2300 cwt. against 3800 cwt. last year.

Soda Compounds.—*Crystals* steady at 42s. 6d. per ton, ex ship. *Bicarbonate*: Unchanged at £7 5s. per ton. *Caustic*: Steady at £8 per ton for 70 per cent. white, and £7 per ton for 60 per cent. *Nitrate*: Refined £8 5s., ordinary £7 17s. 6d. per ton.

Spermaceti—Is higher at 1s. 5d. per lb. for good white block.

Spices (Various).—*Pimento*: 1281 bags offered, bnt only 300 found buyers at last rates; ordinary grey to middling, 2⅞d. to 2¼d. per lb. *Pepper*: Only 14 bags fine bold *Singapore* sold at 2⅜d. per lb, the arrival market being steady. *White Pepper* very quiet; 40 bags *Penang* only sold at 3⅝d. per lb., and 105 bags *Singapore* at 3½d. for ordinary small, 4⅛d. for good fair, and 4⅜d. per lb. for fine bold. *Chillies* continue quiet, all lots being taken out. *Capsicums*: 28 bales long red off-stalk *Japan* sold at 24s. per cwt. *Nutmegs*: 16 cases *Penang* sold at steady prices; 64's at 3s., 65's at 2s. 11d., 80's to 82's at 1s. 9½d., 90's at 1s. 8d., 101's at 1s. 3½d., 111's at 1s. 1d. per lb.; 20 packages *West Indian* sold: 68's at 2s. 7d., 84's at 1s. 7d.

Sugar of Milk—Is rather lower, being offered at from 62s. 6d. to 70s. per cwt., according to brand.

Terra Japonica.—*Cutch* continues in slow demand, and privately sales are unimportant. *MM* slabs, 28s. 6d. per cwt. At auction 390 boxes offered and 290 boxes sold "without reserve," inferior *ACL* block at 10s. to 14s. 6d. per cwt. and common Coat of Arms slabs at 5s. 6d. to 10s. 6d. per cwt. *Gambier* is steady, but current business is unimportant. On the spot whole bales quoted 15s., and for arrival October to December steamer, sellers at 14s. 6d., and buyers, November to January steamer, 14s. 6d. per cwt.

Tragacanth (Gum).—Business is on a very limited scale, high prices, which, however, remain firm, checking business.

Vanilla.—Fine quality sells still at long prices, but there are considerable arrivals landing. Stock, about 930 tins mostly new.

NEWCASTLE REPORT.

October 22, 1896.

This market continues to jog along quietly. The shipments are beginning to fall off now that the Upper Baltic season is about finished. *Refined alkali* through scarceness is somewhat dearer. *Soda crystals* for home use are more inquired after, and *Sulphur* keeps very steady at quotations. Prices are:—*Bleaching powder*, according to markets, £6 10s. to £7 10s. *Soda crystals*: 37s. 6d. to 45s. *Caustic soda*: 70 per cent, £7 5s. to £7 10s. *Alkali*: 52 per cent., £5 2s. 6d. *Soda ash*: 52 per cent., £4 5s.

The Manchester and Liverpool Reports appear at page lxxiv.

Chapters on Prehistoric Pharmacy.

YE ANTIENT MANUFACTURE OF COMPRESSED TABLETS.

By Satiricus.

ONCE upon a time, long before the Flood, when Hasisadra (commonly called Noah for short) and his floating menagerie were yet in the womb of the future, yea! even before Zeus existed or the gods of the Egyptians had been conceived, medicine was not. Medicine, that is to say, in the post-diluvian sense of the term. For early man, cunning primeval man, knew a trick worth two of that which consists in removing the ill effects of excess of that which is good, by indulgence in the physic which pleaseth not.

The Man of the Stone Age probably suffered little from any physical complaint save indigestion, and that only very occasionally, after the ingestion of some unusually tough morsel. Little trouble was caused him then, however, for he simply did what recent research has proved him to have been capable of doing, and promptly evacuated the contents of his stomach by a voluntary contraction of the muscles surrounding that organ. Physic was accordingly superfluous, and as a matter of fact did not exist, therefore could not be thrown to the dogs.—Q. E. D.

As the centuries rolled on, during this period of minus dates, and primitive man got shrewder, he became particular in his tastes, preferred certain joints of the megatherium and deinosaurus to others, allowed them to become moderately "high" before consumption, and in various ways played the mischief with his "innards," until at length he acquired a fairly-developed liver. And now there gradually dawned upon our ancestral hero a rough system of therapeutics, based upon the doctrine of compensation. Thus, after excessive indulgence for some days in the flesh of animals, he found it necessary to resort to the kind of eclectic treatment involved in the exclusive use for a certain period of different roots and berries as articles of diet, and *vice versâ*. Unfortunately, though the blessings of a mixed diet thus became revealed, variety in food stuffs was not always available, but meanwhile medicinal as distinguished from dietetic effects became familiar, and a sort of homœopathic fad sprang into existence, which led directly to the invention of the compressed tablet, until now erroneously regarded as the culminating triumph of pharmaceutic skill in modern times.

The interpretation of antediluvian scratches, commonly but mistakenly attributed to glacial action, on some of our hardest rocks, reveals the interesting fact that the making of the first tablets came to pass in this wise:—A meditative antediluvian, hungry as members of his class mostly were, finding himself one day weaponless in a place where the ancestors of the modern rabbit abounded, and not a stick or a stone nigh, sat down to rest himself awhile after vainly attempting to catch some of the fleet-footed bunnies by running after them. As he reflected disconsolately upon the disparity between his running powers and those of the small quadruped that so easily eluded him, suddenly the brilliant idea suggested itself to him that a continued course of rabbit ought to result in the gradual acquirement of the rabbit's fleetness by man. This theory seemed to be confirmed when put to the test, mainly, however, because the idea of check experiments was not known in those days. At any rate, a rabbit cult sprang into being, and somehow or other soon included all the swifter humans. Naturally, as the theory spread, other similar hypotheses were framed and tested, antediluvian ducks being absorbed by would-be orators, dogs by fighting men, fishes by swimmers, monkeys by climbers, and so forth.

But the process of absorbing whole animals was long and tedious until a second great genius came upon the scene of a recent disaster one day. He found that a small animal resting in a cavity on the upper surface of a rock had been firmly compressed into, and taken the shape of, that cavity by the sudden fall of a huge block of old red sandstone. Like a flash came the inspiration to compress animal food, for use on the pre-homœopathic principle, and our illustration explains the result. In this manner, then, originated the preparation in a special form of foods that occasionally served as alterative and tonic medicines, thus paving the way for the systems of Galen, Hahnemann, and others. As a corollary arose the use of animal extracts, such as crocodile's brain, bone marrow, etc., etc., from creatures too large for treatment as a whole. But the crowning discovery was that of the compressed tablet?

A Prehistoric Compressed Tablet Factory.

From a restored scratching on an old Red Sandstone rock, discovered near Ilkley. Date, *circa* −x,ooo,ooo.

Unknown millions of years have passed away since, and the effect of repeated convulsions of Nature would undoubtedly have led to the obliteration of all contemporary records but for an accident. Some long-forgotten prehistorian appears to have scratched an illustrated account of the matter on a rock surface. This subsequently became covered by a large boulder and, being so protected against the ravages of Time, has now revealed the truly remarkable facts here published.

CAMWAL.

CHEMISTS' AERATED MINERAL WATERS ASSOCIATION, LTD.

EXTENSION OF PREMISES.

The season of 1896 has been the best on record so far as the output of mineral waters from the CAMWAL factory in Gifford Street, Caledonian Road, N., and the number of new members is concerned. The trade done by this Association has been steadily growing for years, so that from time to time it has been found necessary to extend the premises by absorbing first one and then another of the private houses by which the factory is surrounded. The latest extension has taken the form of a large concrete-floored yard, which is completely covered by a roof specially designed to preserve an even, cool temperature during the summer months. It is used chiefly for loading and unloading the numerous waggons belonging to the company. In the height of the season something like 1200 dozen syphons per day are sent out from the factory, and previous to the alterations these had all to be conveyed into the street on trucks, three cases at a time, before they could be placed in the waggons, this work taking up about four hours each day. Now, however, the waggons can be brought close to the place where the cases are packed, thus saving a great amount of labour and time, besides being much more comfortable for the horses.

Pointing to a driver just leaving the yard with a load drawn by two young spirited horses, Mr. Pirie, the manager, explained to our representative that the company's drivers are all army reserve men, this particular individual having been a farrier-sergeant in a dragoon regiment, so that he thoroughly understands the treatment of the horses under his care.

Notwithstanding the extension just completed, the premises are none too large, for at the present time there are stored in various rooms four thousand dozen cases of syphons all ready, cleaned, and prepared for next year's summer trade, and a large number of cases have had to be sent to the Company's factory at Mitcham, in order to give more space.

Passing through the filling-room, Mr. Pirie pointed out various improvements in syphons, one of the latest being a lengthened lever, the object of which is to give the user greater control when drawing. The method of working the new lever is to grasp the head of the syphon with the fingers and thumb so that gradual pressure may be applied to the lever with the lower part of the hand, thus preventing the sudden outpouring of water, which with the old kind of lever was apt to force out of the glass the liquor it was intended to mix with.

For some time past the Company has purchased few but English syphons, made within a short distance from the factory, and they have so far given every satisfaction, and been able to compete with the foreign-made article.

In connection with the works there is an advertisement room, where exceedingly neat and attractive show plates are made in a variety of shapes and sizes to suit the tastes of customers. There is also a "physicians" room, where old and damaged syphons are overhauled and made ready for use again. One of the greatest drawbacks to Camwal's provincial trade is the railway carriage, but to meet this difficulty it is proposed to establish branches in Manchester and Birmingham, from which customers in the locality can be supplied. What seems to be required to in a measure reduce the excessive carriage is for the chemists in different localities to combine and have one receiving house to which their combined orders could be sent, instead of being forwarded in separate packages. About nine months ago the Company started a chemists' club, and considering the short time that has elapsed since its formation a membership of five hundred is not a discouraging number, although small in comparison with the thousands of chemists in the country. By promoting a spirit of sociability and brotherhood amongst chemists it is hoped that the combination so much desired will be brought about.

PRACTICAL OPTICS FOR CHEMISTS.

CLASSES IN SIGHT TESTING AND CORRECTION.

Since removing from 13, Oxford Street, W., to the larger and much more convenient premises at 51, Clerkenwell Road, E.C., Messrs. J. RAPHAEL AND CO. have determined that their customers shall now be in a better position to build up an optical trade based, as it should be, on scientific principles. To acquire the necessary knowledge, a course of instruction is absolutely necessary, even if it be of only short duration, and they have arranged for a series of classes in practical sight testing and correcting under the direction of Mr. Lionel Lawrence, late principal of the Optical Institute of Canada. This gentleman brings from Canada, where the optical trade has been brought to a point of great scientific excellence, credentials of high order, and not only has he the practical knowledge of his profession gained by life-long experience, but he is also possessed of the essential quality, "tact," in imparting that knowledge to others. In these days of keen competition most pharmacists find it necessary to add to their business some side line, and many will find it to be greatly to their interest to embark in the scientific optical business. Those who have already taken this up or intend to do so ought not to lose the opportunity presented by Messrs. Raphael and Co., but to utilise it so as to qualify themselves for the proper handling of a side line, which is both interesting and profitable, and one that goes extremely well with the business of the chemist. The classes will be held in a large room on the second floor at 51, Clerkenwell Road, E.C. Messrs. Raphael and Co. will gladly supply anyone intending to profit by this opportunity with full particulars on application being made to them.

On the second and third floors Messrs. Raphael and Co. have also fitted up prescription rooms specially set apart for the the execution of special prescription work, the orders being in most cases dispatched on the day of their receipt, which is a great convenience to those provincial and London chemists who want a thing carried out well and quickly. There is no class of articles required in the optical trade that Messrs. Raphael and Co. are not prepared to send out to their customers on the shortest possible notice, their new premises and arrangements being such as to materially assist in the rapid fulfilment of all orders.

PROPRIETARY ARTICLES TRADE ASSOCIATION.

LIST OF PROTECTED ARTICLES.

Size or Advertised Price.	Name of Article.	Minimum Wholesale Price.	Minimum Retail Price.
13½d., 2/9.	Barclay's Dr. Bateman's Drops	10/6, 25/-	13½d., 2/9
*13½d., 2/9.	†Beetham's Anodyne Lotion	9/6, 24/-	1/-, 2/6.
*2/6, 4/6.	† ,, Capillary Fluid and Hair Grower	20/6, 38/6.	2/3, 4/-
*13½d., 2/9.	† ,, Corn Plaster	9/6, 24/-	1/-, 2/6
*1/-, 1/9, 2/6, 4/6.	† ,, Glycerin and Cucumber	8/6, 15/-, 20/6, 38/6	10½d., 1/7, 2/3, 4/
*3/-	† ,, Indel. Extract	27/-	2/9.
*13d.	† ,, Soft Corn Cure	9/6.	1/-
1/6.	Condal Water	13/6.	1/6.
2/9, 4/6.	Davis' Calorific	27/-, 43/-	2/9, 4/6.
1/6.	,, ,, Shields	14/6.	1/6.
13½d., 2/9.	Dicey's Dr. Bateman's Drops	10/6, 25/-	13½d., 2/9.
2/-, 2/9.	,, Daffy's Elixir	18/-, 25/-	2/-, 2/9.
13½d., 2/9.	Dredge's Heal-All	10/6, 25/-	13½d., 2/9.
		1 doz. 6 doz. 1 gross	
7½d.	Frog in your Throat?	5/6, 31/-, 60/-	7½d.
1/-, 2/-, 5/-, 10/-	Gell's Foot-Rot Ointment	7/9, 15/6, 38/9, 77/6.	1/-, 2/-, 5/-, 10/-
3/6, 2s.	Hall's Coca Wine	27/-, 15/6.	3/-, 1/9.
1/3, 2/-	Invalid Bovril	11/-, 19/-	1/3, 2/-
13½d., 2/9.	Mrs. Johnson's American Soothing Syrup	10/6, 25/-	13½d., 2/9.
13½d., 2/9.	Lambert's Balsam	10/-, 27/-	1/-, 2/9.
13½d., 2/9, 4/6.	Lascelles' Pills	9/6, 24/-, 39/-	1/-, 2/9, 4/3.
3/6, 2/3.	Liebig's Ext. of Meat and Malt Wine (Keystone Brand)	30/-, 17/-	3/3, 2/-
*2/3, 4/.	Moller's New Hydroxyl-free Cod-liver Oil	18/6, 36/-	1/11, 3/8.
1/-, 1/9, 3/3.	Peptarnis (Liebig Co.'s Peptone of Beef)	9/3, 17/-, 33/-	1/-, 1/9, 3/3.
	In £5 lots	9/3, 16/6, 32/-	
*13½d, 2/3, 4/6, 11/-	Powell's Balsam of Aniseed	10/6, 21/-, 42/-, 105/-	13½d., 2/3, 4/6, 11/-
*13½d., 2/3.	,, Mild Aperient Pills	10/6, 21/-	13½d., 2/3.
13½d., 2/9.	Dr. Scott's Bilious and Liver Pills	10/-, 24/-	1/-, 2/6.
13½d., 1/6, 2/9.	Smedley's Chillie Paste	9/6, 12/9, 24/-	1/-, 1/6, 2/9.
*1/-, 2/6.	Zox	9/-, 24/-	1/-, 2/3.
*2d. each.	,, (loose)	12/- per gross.	2d. each.
*13½d.	,, Plasters	10/6.	13½d.
*13½d., 2/-, 3/6.	,, Tonic	10/3, 18/-, 33/-	13½d., 2/-, 3/6.

* Added since last month. † £5 lots, single or assorted goods: 5 per cent. discount for cash with order.

The proprietors of the above articles will not permit them to be supplied to firms who retail any of them below the minimum prices. The name of any firm selling any of the articles below the said prices will be sent to the manufacturers and to every wholesale buyer, and supplies of the whole list will be withheld.

WESTERN CHEMISTS' ASSOCIATION (OF LONDON).

ANNUAL MEETING.

The first meeting of the season was held at the Westbourne Restaurant, 1, Craven Road, Paddington, W., on Wednesday, October 21, the chief business of the meeting being the reading of the report and balance sheet for the past year and the election of officers and Committee for the ensuing year. There was a good attendance of members, Mr. J. C. Hyslop, President, in the chair.

The Secretary, Mr. Cracknell, read the minutes of the last meeting, held on Wednesday, May 20, 1896, which were adopted as read.

The Treasurer, Mr. J. H. Mathews, in presenting his report, said he had not very much to say, but there was one very pleasant thing, and that was they had this year a balance in hand. Their receipts had been £12 18*s.* 6*d.*, and their total expenses £11 3*s.* 3*d.*, thus leaving a balance on the right side of £1 15*s.* 3*d.* This was the first occasion since its formation that the Association had been in this happy position. It probably arose from their having started an Entertainment Fund, out of which the printing expenses were paid, instead of from the funds of the Association. He was pleased to say that it was now self-supporting, which state of things was not at all anticipated when the Association first came into existence.

The Secretary then read the accounts of the Entertainment Fund. He regretted to say he was not in the same happy position as the Treasurer. After all expenses were paid, a balance of 19*s.* 9*d.* remained due to himself. This was mainly owing to the fact that he had to meet the expenses before receiving the subscriptions, some of which had not yet been paid.

The following gentlemen were then elected members of the Committee :—Messrs. H. Cracknell, R. S. Dampney, S. Drury, A. Dyson, W. A. Goodall, F. Gulliver, J. F. Harrington, T. W. Horsley, J. H. Mathews, J. W. Phillips, J. W. Smith, J. W. Taplin, A. Tennant, W. Warren, and S. Lynn.

Mr. Andrews called attention to the rule by which all past-Presidents became *ex-officio* members of the Committee. He thought it ought to be altered, because in a few years' time, when the past-Presidents were more numerous than at present, there would be no room on the Committee for gentlemen other than the *ex-officio* members.

It was agreed that the rule was one which required a little alteration, and should receive attention at the proper time.

The President proposed that Mr. Watts and Mr. Marsh be appointed auditors. This was seconded and carried.

A question arose as to whether the auditors elected were simply appointed to audit the past year's accounts or for the ensuing year, there having been none elected at the last annual meeting. It was decided that they should act for both years.

The auditors, having certified that the Secretary's and Treasurer's accounts were correct, they were accordingly passed and signed.

The President then delivered his address previous to resigning office. In reviewing the history of pharmacy, he was glad to see there was no sign of relapsing into the drowsiness which prevailed six or seven years ago, but that there was a much brighter and livelier prospect before them. Pharmacy need not despair ; efficiency and careful attention to business would meet with their proper reward. Mr. Hyslop then referred in touching terms to the loss of their late comrade Mr. Reynolds, who had so often entertained them at their meetings. Finally being reminded by a member present that this was the 91st anniversary of Trafalgar, he said that, as then, so now, England expects every man, and the pharmacist especially, to do his duty.

Mr. Andrews proposed, and Mr. Martindale seconded, a hearty vote of thanks to Mr. Hyslop not only for the address that evening, but also for all previous services rendered by him. This was carried with acclamation.

Mr. Martindale then proposed a toast to the glorious memory of the hero of Trafalgar Bay, which was drunk with enthusiasm.

The election of other officers will take place on Wednesday, October 28.

NEWS IN BRIEF.

A Bogus Apothecary.—On October 12, at the Southwark County Court, L. Thomasso, of 148, Westminster Bridge Road, was sued by the Apothecaries' Society of the City of London for unlawfully practising as an apothecary.—From the opening statement, it appeared that a Mr. Thomas William Tyrrell, a clerk, acting under certain instructions, paid visits to the defendant's premises by appointment, and there saw defendant, who examined him for some imaginary ailment, and prescribed for him twice. It was then decided to proceed against the defendant, and after the plaint had been issued, he (Thomasso), counsel said, called at the solicitor's office, and asked if they would accept half the penalty (£10) and not proceed against him, which they declined to do.—Similar evidence was given by a second witness, referring to another occasion. For the defence, Thomasso was called, and stated that he was a patent medicine proprietor, and produced a certificate in Latin, from an American University. He had never been registered in England as an apothecary, and denied having acted as one.—His Honour said he was satisfied that the defendant had acted as an apothecary, and gave judgment for the full penalty of £20.

Carbolic Acid, even when supplied in special bottles and properly labelled, may yet be taken with fatal results, but this will chiefly be so in the case of suicides, who are likely to attain the desired end in spite of any obstacles when once their minds are made up, as was shown at an inquest at Rotherhithe on September 25. A chemist's assistant said he sold carbolic acid to the deceased woman, presumably for disinfecting purposes. The bottle, which was blue, was labelled "Poison" not because of any regulation, but for the sake of precaution. The Coroner remarked, "Very wise precautions to take, I wish every chemist would do the same." Continuing, he said, restrictions ought to be placed upon the sale of carbolic acid, but he thought the authorities were afraid to take any measures in that direction, as it was such a useful article.

"Weed-Killer" in a small cask, labelled "Poison," kept in a stable with the door locked, at Oxford, was taken in mistake for beer by a man who was there on business. At the inquest a juryman suggested that the verdict should be accompanied by a rider to the effect that more care should be taken in keeping poison in a secure place. The Coroner said he should decline to have anything to do with such a recommendation, unless the whole jury wished it, and in reply to the deceased's father, who thought sufficient care had not been used in keeping the poisonous liquid, he said he must have no more talking of that kind.

The Plymouth, Devonport, Stonehouse and District Chemists' Association has fixed its third annual dinner for Wednesday, November 18, 1896, to be held at the Royal Hotel, Devonport, at 7 p.m. Dress either evening or morning, is optional, and the tickets are 5*s.* each. Mr. Martin Johnson, 104, Fore Street, Devonport, is the hon.-sec. of the dinner committee.

A Football Match was played on Saturday last, the 17th inst., between the Metropolitan College of Pharmacy and Westminster College of Pharmacy, which resulted after a good game in a win by the former by four goals to *nil.*

Women Commit Suicide by Laudanum.—Two cases of laudanum poisoning occurred in Glasgow on Saturday, October 17. Mrs. Miller (42), wife of a baker, in the course of the afternoon stated that she would make away with herself. She sent some of her children to purchase separate pennyworths of laudanum. She swallowed the drug and then went to bed, dying in her sleep.—Mrs. Robb (39), also procured laudanum in separate pennyworths, and committed suicide. Recently it was pointed out in the Journal that there had been several instances in Edinburgh of this means of procuring sufficient poison by purchasing small quantities in several shops. Apparently the plan is not confined to Edinburgh.

Presentation to a Traveller.—On the occasion of the marriage of Mr. W. Bray, senior representative of Messrs. A. de St. Dalmas and Co., medical plaster manufacturers, Leicester, the firm showed appreciation of his services by presenting him with a very handsome silver tea and coffee service.

Depression in the Alkali Trade is indicated by the fact that owing to slackness of trade and overstocking, one hundred men, including fitters, coopers, and labourers, have been discharged from Messrs. Brunner, Mond, and Company's chemical works, Winnington, Northwich. There are between 2000 and 3000 men employed on the eight-hour shift system, and a large proportion have received notice of a reduction of one shift per week.

The Legacy of a Cardiff Chemist.—At the ordinary monthly meeting of the committee of the Cardiff Infirmary, the solicitor acting for the committee *re* the bequest of the late Mr. T. J. Jones, chemist, of Bute Street, Cardiff, to the institution, reported that the personal estate amounted to £5722 19*s.*, out of which pecuniary legacies, debts, funeral expenses, etc., to the amount of £3329 4*s.* 6*d.*, were to be deducted, leaving a balance of £2393 14*s.* 6*d.* In addition to this there was real property of twelve acres of land near Bridgend, which was purchased a few years ago for £1010, which would make a total net value of £3403 14*s* 6*d.* The whole of the property, real and personal, was given to the widow for life, and all her debts, both present and future, were to be paid out of it. The residue of the property was then to revert to the infirmary, and a ward was to be founded, to be named the Jones the Chemist Ward.

Mr. Asquith on Education.—Mr. H. H. Asquith, M.P., presented the prizes to the students in the science, technology, and arts department of the Yorkshire College, Leeds, on Wednesday, and referred to the fact that the whole face of the country was now covered with a network of primary schools, which had been erected and were almost supported by funds provided by the community at large. The grammar schools, which even when he was very young had fallen asleep, had been awakened into new life and activity; technical instruction was being provided, perhaps not adequately and not in all respects under the most satisfactory conditions, but it was provided for by the county councils of England out of public funds, and, to crown our educational edifice, or rather to complete the work of our own time, we had witnessed in our centres of industry the growth of colleges, which could not continue to discharge the vital function they had to perform to the community if they were to be treated as self-supporting institutions dependent upon fees, and if they could not appeal for generous support from those whose support could be given. He would advise them not to rely upon governments alone. An institution like the Yorkshire College, if it was to be continuous and permanent in its wellbeing, should have an endowment of its own, and he could not but hope that, when the facts as to its future existence were brought home to the public mind, they would before very long see not only the debt at present in the college wiped out of being, but some really consolidated means provided for relieving its council, its principal, and its whole educational staff from those harassing cares which at present hampered the vitality of the institution and curtailed the sphere and scope of its activity.

Sir Henry Roscoe on Education.—Sir Henry Roscoe, the Vice-Chancellor of London University, who presided on Wednesday at the public distribution of diplomas, prizes, and certificates awarded by the College of Preceptors to candidates at the midsummer examinations, spoke on a similar topic to Mr. Asquith. He said it was especially satisfactory to him, as a member of the late Royal Commission on Secondary Education, to find that there seemed every reason to believe that the main recommendations of that Commission on this subject would be adhered to. The proposal of the College was to call together a conference representative of such educational bodies as had not only an interest in the subject, but also possessed considerable influence in moulding public opinion, and especially with regard to Parliamentary action. He had no doubt that the teaching bodies which it was thus proposed to assemble would not overlook the administrative side of the problem, but would call to their aid representatives of bodies peculiarly qualified to advise them upon these important matters. There could not be any doubt that the failure of the legislative attempt of last Session was mainly due to the lack of appreciation of the educational opinion of the country, more particularly with regard to local authority for secondary education. Hence it was of very great importance that this opinion should now be strongly expressed.

The Supply of Laudanum by Chemists.—At an inquest on the body of a woman who died at Kennington on Saturday night last, it was shown in evidence that she had been supplied with two lots of laudanum whilst under the influence of drink, by a local chemist. Opium poisoning was the cause of death, and the Coroner, Mr. A. Braxton Hicks, said it was impossible to lay too great stress on the importance of exercising care in the sale of poisons, especially to women, who were apt to get very excited. He had known a person to go to thirteen chemists and get a pennyworth of laudanum at each shop and then take the lot. That was a matter which could not well be avoided, but here was an instance in which a drunken woman bought poison at the same shop twice in half an hour. Some of the trade journals objected to his interfering with the mode in which chemists conducted their business, but he was protecting the public. Mr. Heely, the chemist who sold the laudanum, said he had been in business a great number of years, and this was the first time there had been any complaint against him. The jury retured a verdict of suicide during temporary insanity, and expressed it as their opinion that greater care should be exercised in the sale of poisons, especially to women.

The Chemists' Club will be the scene of a smoking concert, on Thursday, October 29, at 8 p.m., when Mr. Horace Davenport will preside. Tickets for non-members of the club may be obtained from the Steward or the Hon. Secretary, W. A. Goodall, 1, Elm Park Terrace, Fulham Road, who will also be glad to receive intimation from any who will kindly contribute towards the success of the evening, musically or otherwise.

LIVERPOOL REPORT.

October 21, 1896.

Bicarbonate of Soda.—£6 15s. per ton.

Bichomate of Potash.—Firm, 4⅝d. per lb.

Bleaching Powder—Dull. £6 12s. 6d. per ton for "hard" *f.o.b.*

Borax.—20s. per cwt.; 21s. *powdered.*

Canary Seed—Is dull, present price pot, 31s. per 464 lbs.; forward, 27s. 6d. to 28s.

Carnauba Wax.—30 bags fair grey at 55s. per cwt., and 14 bags yellow at 88s. 6d. per cwt.

Caustic Soda.—70 per cent., £7 5s. to £7 10s. per ton; 60 per cent., £6 5s. to £6 10s.

Chlorate of Potash.—4⅛d. to 4¼d. per lb.

Copperas.—*Lancashire*: 38s. per ton.

Cream of Tartar—Is lower in price, sales having been made at 87s. 6d. per cwt.

Honey.—*Chilian* continues in good demand. *Pile* 1, 21s. 6d. to 22s. 6d.; *Pile* 2, 20s. 6d., and *Pile* X, 25s. to 28s. per cwt., 350 barrels sold.

Linseed—Is only offering in small amount at 32s. to 33s. per 416 lbs. 220 bags of *Trebizonde* sold at 30s., and 2700 bags of *Turkish*, *ex*-quay at 32s. to 32s. 9d.

Nitrate of Soda.—Inactive at 7s. 10½d. to 8s. 1½d. per cwt.

Oils (Fixed) and Spirits.—*Castor oil* remains at 3d. per lb. for the three varieties *Calcutta*, *French*, and *Madras*. *Olive oil* is going steadily at good prices, *Malaga*: £29 10s. to £30 10s. per tun; *Seville*: £28 to £30, and *Syrian*, £27 to £28. *Linseed oil* slightly dearer for *Liverpool* pressed, 18s. to 18s. 6d. per cwt. *Cotton seed oil*: *Liverpool* refined held at 17s. to 17s. 6d. per cwt.; *American*, 17s. 6d. to 18s. *Spirits of Turpentine* a turn easier, 21s. 9d. to 22s. per cwt.

Pearlash.—35s. per cwt.

Potashes.—21s. 6d. per cwt.

Sal Ammoniac.—37s. and 35s. per cwt.

Sulphate of Copper.—£16 per ton.

Wax (Beeswax).—49 bales of *Gambia* at £6 15s. per cwt. sold; also 5 tons of *Chilian* at £6 16s. 6d.

MANCHESTER REPORT.

October 21, 1896.

Although there has been a slight "spurt" during the past fortnight, induced no doubt by the numerous inquiries for next year, this appears to have subsided. In this district there is a movement in the direction of short time, especially at Widnes, and also to some extent, though not so great, in Cheshire. This will lead to a reduced output of heavy chemicals, in the hope probably that prices may be maintained. *Brown Acetate of Lime* is firmer at £4 5s., best *Welsh*, and over next year £4 3s. 9d. is quoted. Owing to the continued large imports of *Yellow Prussiate*, coupled with a reduction in *Beckton* make, local makers of this article are accepting 6¾d. per lb. *Sulphate of Ammonia* is down to £7 3s. 9d. *Leith*: Another lowest record. In drysalteries generally, trade is quiet, although a fair business is passing. *Naphthas* are lower, best colourless white (miscible) being quoted 3s. per gallon, and *Solvent wood*, 2s. 4d. to 2s. 6d. *Pitch* is very uncertain, and about 29s. per ton *f.a.s.* Manchester here. *Green Copperas*, very firm. *Recovered Sulphur* is unchanged. *Sulphate of Copper* fairly firm at £16 5s. to £16 10s. *Alum* in fair request at £4 17s. 6d. to £5 for *loose lump*, and *Sulphate of Alumina*, £4 12s. 6d. to £4 17s. 6d., according to quality *ex* warehouse.

EXCHANGE—OFFERS AND WANTS.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Books, etc.

Garrod's 'Materia Medica'; Pilley's 'Element. Chemistry'; Poyser's 'Magnetism and Electricity'; Angell's ditto; Bland's 'Botany.' Wanted.—Cripps' 'Pharmacy'; Green's 'Botany.' Particulars from and to—"Botany," 70, Fortune Green Road, W. Hampstead, N.W.

'Manual of Physiology' (Carpenter), cost 12s. 6d., accept 6s. 6d., splendid offer, great sacrifice. Hoblyn's 'Dictionary Medicinal Terms,' 8s. (old and rare). 'Science Siftings,' Vol. X., new, 2s., post free.—Ault, Alfreton.

A book of 130 Well-tried Recipes for Chemists and Druggists, comprising well-selected formulæ for general, remedial, veterinary, toilet, and everyday preparations. Post free, 1s. 6d.—Tully, Chemist, Hastings.

New, free, M'Alpine's 'Biological Atlas, Guide to Practical Study of Plants,' 423 coloured figures, 4s. (pub. 7s. 6d.); M'Alpine's 'Zoological Atlas,' 290 coloured figures, 9s. (pub. 18s.).—Davis, "Chestnuts," Gordon Hill, Enfield.

OFFERED—(*continued*).

Free, as new, Milton's 'Gonorrhœa and Spermatorrhœa,' 2 vols. (16s.), 7s. 6d.; Thudichum's 'Comp'ete Guide Analysis of Urine' (15s.), 7s. 6d.; Neubauer and Vogel's ditto, 5s.—Davis, "Chestnuts," Gordon Hill, Enfield

Miscellaneous.

Weiss Galvanic Battery, 30 cells, quite new, in mahogany case, £3 10s.; also Weiss Portable Faradic Battery, £2 2s.—Farthing, Chemist, Spennymoor.

Offer wanted for 280 lbs. castor oil, quantity beeswax and tartaric a id.—A. M., 38, Cannon Street, Birmingham.

Shop Fittings, etc.

Set mahogany drawers, 16 ft. long, 97 drawers, spaces for medicine bottles; two carboys, 5 gallons; mahogany desk with glass-case front.—W. Heffer, Fitzroy Street, Cambridge.

OFFERED—(*continued*).

Apparatus.

For Sale, copper still, block tin, worm, oak condensing-tub, 20 gallons.—Parkin, 47, Market Place, Doncaster.

WANTED.

Materia Medica Cabinet wanted, in good condition, preferred in small wooden boxes. State price to—"Nepenthæ," 5, Serle Street, London, W.C.

Apparatus, fittings, etc., wanted for general laboratory.—Full particulars to East Hill Laboratories, London, S.W.

A 1-dozen 60-grain pessary-mould, in good condition.—F. P., 137, Cornwall Road, Brixton, S.W.

Camwal Shares (10 or 20). State lowest price—Parkin, 47, Market Place, Doncaster.

Wanted.—Ganot's 'Physics,' 1893; Green's 'Botany,' Part II.; Perkin and Kipping's 'Organic Chemistry'; Maisch's 'Materia Medica,' latest edition. Lowest prices to—J. R., 23, Treherne Road, North Brixton.

IRELAND.

A Pharmaceutical Flitting has just taken place at Ballybrack, Co. Dublin, Mr. Councillor Beggs having moved his branch there to larger premises in the same village.

The Local Government Board has taken exception to the inclusion by the Derry Guardians in the list of extra medicines of such items as rose water and orange-flower water, while with reference to lime water it is, they state, usual wherever an apothecary is employed for him to make these up, and also syrupus simplex, which is merely lump sugar dissolved in water. The apothecary to the union has been requested to explain his failure to make up the articles in question.

Mr. Webb, manager of Messrs. Hamilton and Long's State Pharmacy, Lower Sackville Street, Dublin, is suffering from typhoid fever, and undergoing medical treatment in the Adelaide Hospital.

Mr. H. C. Meyrick, L.P.S.I., manager of Mrs. English's Medical Hall, Mullingar, has resigned that position and gone to a similar place in Galway town.

A Serious Fire occurred last Saturday afternoon in one of the stores of Messrs. McMaster, Hodgson and Co., the eminent Dublin firm of wholesale druggists. Owing to the highly inflammable nature of the contents, the progress of the fire was very rapid, and the efforts of the firemen were chiefly directed towards saving the other property adjoining. The damage done is roughly estimated at about £4000. The place is insured. The fire is one of the most disastrous that has occurred in Dublin for many years.

Dr. J. V. Byrne has opened a well-fitted-up pharmacy as Lawrence Street, Drogheda.

The Cork Guardians have appointed the Cork Drug Company, Limited, contractors for medicines to the Board.

Mr. James Horgan, L.P.S.I., formerly of the Apothecaries' Hall, Dublin, has been appointed Assistant Dispenser to the Bristol Royal Infirmary.

The Birr Union Contract.—At a meeting last week of the Birr Board of Guardians the question of the supply of drugs and medicines to the Union, which has been the subject of a sworn inquiry by the Local Government Board, was finally settled. The Board of Guardians had invited tenders for the supply, and the following figures represent the analysis of the tenders received:—

Drugs.	Instruments.	Total.	Name.
£123	£39	£162	Leslie and Co., Dublin.
127	45	172	Hunt and Co., ,,
142	40	182	Boileau and Boyd, Dublin.
161	37	198	Apothecaries' Hall, ,,
129	38	167	Goldon and Co., Birr.
145	41	186	Cork Drug Co., Cork.

On the motion of Mr. Caulfield French, D.L., it was resolved by a majority of five votes to accept Messrs. Leslie's tender.

Sir Charles Cameron's Analyses.—The Local Government Board has informed the Guardians of the Mountmellick Union that they do not consider as satisfactory the explanation of the drug contractor to the Union on certain matters connected with the analysis of drugs. They also inform the Guardians that in matters of analyses the decision of Sir Charles Cameron must be regarded as final. The Guardians assert that the medicines in question were only deteriorated a little by evaporation, and there was little wrong with them. The contractors, Messrs. Leslie, Dublin, have received for their information a copy of the letter referred to.

DIARY OF THE WEEK.

Secretaries of Societies are requested to send notices of forthcoming meetings not later than Wednesday in the previous week.

Saturday, October 24.

Pharmaceutical Football Club v. Melrose Rovers, at Hendon.
Train from St. Pancras at 2.27. Kick off at 3.30 p.m.

Tuesday, October 27.

Royal Photographic Society, at 8 p.m.
"Demonstration of Acetylene Apparatus for Portraiture and the Optical Lantern," by Mr. C. Hoddle.

Wednesday, October 28.

Brighton Junior Association of Pharmacy, at 9 p.m.
"On Wasps," by Mr. B. Lomax, F.L.S.

Midland Chemists' Assistants' Association, at 9 p.m.
Musical and Social Evening.

Thursday, October 29.

Chemists' Assistants' Association, at 8.30 p.m.
Short Papers by Members.

Chemists' Club, at 8 p.m.
Smoking Concert.

MARRIAGE.

Bray—Poad.—On October 5, W. J. Bray, senior representative of Messrs. A. de St. Dalmas and Co., Leicester, to Florence Maud, daughter of Mr. G. H. Poad, Exeter.

LATE ADVERTISEMNTS.

Assistants Wanted.

WANTED.—A smart Junior. State terms and references. Fargher, Splott Rd., Cardiff.

QUALIFIED Assistant wanted for West end house. In-doors. State particulars of experience. Age, about 23. Address, W., care of Messrs. Meggeson & Co., 14 & 15, Miles Lane, Upper Thames St., London, E.C.

Leading "Prescribed Preparations" of

WM. R. WARNER & CO.

LITHIA

Each Tablet containing two grains Citrate of Lithia affords a convenient method for administering a definite quantity of soluble Lithia in a pleasant form, besides the advantage of having fresh water with each dose; presenting a therapeutic value of a higher standard than the various spring waters which often contain but an indefinite quantity of the needed salt. The dose is usually one Tablet in a glass of pure water three times daily.

VICHY

"Effervescent Vichy Tablets appear to us to be a distinct advance in the mode of administration of mineral waters. These Tablets may be held to replace the bottled spring waters, which are cumbersome and often of doubtful strength medicinally. They are portable, economical, and of definite strength."—MEDICAL PRESS AND CIRCULAR, August 21st, 1895.

IN POWDER **WARNER'S INGLUVIN REGISTERED** OR TABLETS.

The essential principle of the gizzard, and bearing the same relation to poultry that pepsin does to the higher animals. Where pepsin refuses to act, and where, in severe cases, it has even been rejected by the stomach, Ingluvin has effected relief rapidly and with ease. Unstamped for Dispensing. Also in compressed form, and in bulk bottles for Dispensing.

PARVULES

Are not Granules, but a distinct class of preparations, being perfectly soluble and definite in their action.

Their well-merited success has given rise to numerous imitations, under various titles. Unscrupulous competition renders it necessary for the profession to particularly specify PARVULES, and thus to avoid unworthy efforts at substitution.

CASCARA ELIXIR

Disappointment from the use of Cascara preparations has resulted from the use of an inferior drug, or from an unstable preparation. The Elixir prepared by W. R. W. & Co. is palatable and reliable. Its pleasant taste, free from the characteristic bitterness of the drug, renders it peculiarly acceptable to ladies and children.

SOLE DEPOT IN GREAT BRITAIN—

F. NEWBERY & SONS,

Chemists are invited to send for new and full list of W. R. Warner & Co.'s Soluble Coated Pills and other "Galenicals," revised to current date, with complete formulæ.

ESTABLISHED 150 YEARS

Chemists are reminded that during the season for effervescents, Bromo Soda and the various Salines of W. R. Warner & Co. are in frequent request for dispensing.

1 & 3, KING EDWARD STREET, LONDON, E.C.

« Market Report »

And Prices Current of Drugs, Chemicals, Oils, and Seeds.

The quotations here given are in all cases the lowest net cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

[Specially Compiled for the 'Pharmaceutical Journal.']

LONDON REPORT.

LONDON, OCTOBER 29, 1896.

Business during the week has had an improving tendency, and although actual transactions have not been specially large or important, still, in spite of the advance in the Bank rate last week, a more hopeful feeling appears to prevail; in view of the possibility, at least, of the Eastern Question being somehow or other settled without hostilities, combined with the apparent prospects that the Silver Party in America will not succeed in getting their nominee elected for the Presidency. As regards the actual position of our markets, we may mention that the reduction in price of sulphate of quinine brings the article back to almost the lowest figure which it has ever touched (from first hand at least). Cocaine is also again back to its lowest value. Cardamoms are tangibly dearer. Senna a little firmer. Saffron is also firmer, while most other articles of nterest are comparatively steady with perhaps a slight tendency to a weakness in a few articles, and a tendency in other direction in other articles. Camphor is expected to advance. Lithia has been advanced by the makers, while price of pilocarpine has been tangibly reduced Full details of the various articles will be found below:—

ACID, CARBOLIC.—In good demand for next year's delivery, prices remaining, however, practically unchanged. *Crude* is slightly dearer at 1s. 10½d. per gallon for 60°, and 2s. 3d. for 76° *liquid* unchanged.

ACID, CITRIC—Is exceedingly quiet at 1s. 1¾d. per lb. on the spot.

ACID, TARTARIC.—Rather easier for *Foreign*, business in quantity being possible at 12¾d. per lb. *English*: Quiet and unchanged.

ALOES.—*Curaçao*: From America it is reported that the arrivals this season have been very large, but present low prices are considered to be worth attention. Of 182 boxes and 24 gourds fine bold livery in boxes fetched 28s., slightly drossy 22s. per cwt., fine bold livery in gourds fetched 49s.; to 51s. balance, chiefly consisting of black capey and drossy, were withdrawn. Of 20 kegs good *Socotrine*, part sold at 80s. per cwt., rest held for same price.

AMMONIA COMPOUNDS.—*Sulphate* is easier; *Gray*, prompt 24 per cent., London, £7 6s. 3d.; Beckton terms, £7 2s. 6d. per ton. *Carbonate*: Steady at 3d. per lb. in *casks*, and 3¼d. per lb. in *jars*. *Sal ammoniac*: Unchanged.

ANISEEDS.—Nineteen bags fair *Russian* sold without reserve at 14s. 6d. per cwt.

ARAROBA.—A late arrival of good quality, analysing about 60 per cent., has been disposed of at 6s. 9d. per lb., which in the face of further arrivals must be looked upon as a good price.

ASAFŒTIDA (GUM).—High prices asked check business to some extent, but holders are very firm, as it is anticipated that there will be no shipments of importance this season. A few sales have taken place this week at private rates, said to be very full.

BALSAM COPAIBA.—Four casks bought in at 2s. 1d. per lb.

BALSAM, TOLU.—Three cases were sold at 3s. 2d. per lb.

BIRDLIME (JAPANESE).—Of five cases four cases sold at 6d., and one case at 5½d. per lb.

BUCHU LEAVES. — 16 bales good green rounds met with good competition at somewhat dearer prices.

CAFFEINE.—The price has been reduced in America, but here remains unchanged at 18s. per lb. for 1-cwt. lots to 19s. per lb. for smaller quantities.

CAMPHOR. — There has been a good demand for *Crude*, the position of the syndicate in this article being materially helped by the firmness of the Chinese holders. The stocks in China as here are heavy, and last reports from Canton express doubt as to whether natives will be able to keep up present level of prices. Spot price here 120s. per cwt. for *China*, and 130s. for *Japan*, prices for shipment being higher than spot rates at 125s., and 135s. per cwt. respectively. *Refined* exceedingly firm, and higher prices are anticipated.

CARDAMOMS.—These have been in good demand privately, and purchases in the last drug sales at 3s. per lb. have this week been re-sold at 3s. 5d. per lb. It is generally thought that considerably higher values will be shortly seen for this article. Only 20 cases, from second hand, were offered. Of 10 cases 2 cases had been sold at 4s. per lb. prior to sale. Remaining 8 cases were held for 3s. 6d. per lb., while the other lot of 10 cases sold freely at from 3s. 2d. to 3s. 10d. per lb., being an advance in one case of 5d., and as regards the balance of 9d. per lb. on prices previously paid.

CASCARA SAGRADA.—110 bags fair quality were bought in at 17s.

CLOVES—Are firm with however not very much business doing; fair *Zanzibar* on spot fetched 2¼d. per lb., and good bright picked *Penang*, 6½d. per lb.

COAL TAR DISTILLATION PRODUCTS—Are quiet and without change.

COCAINE.—The *Hydrochlorate* has been reduced this week to 12s. 10d. to 13s. 6d. per oz., according to quantity and package, *pure* in proportion. The better supply of *Crude*, with consequent reduced values, have no doubt had something to do with the reduction of the refined, but it is stated that the main reason was the under-selling by one maker.

COCHINEAL—Is firmer, 1s. 3½d. to 1s. 4d. per lb. being asked for good silver grain, and 1s. 2d. to 1s. 2½d. per lb. for black grain.

COD-LIVER OIL.—Old-fashioned dark strong *Newfoundland* was taken out at 6s. per gallon, good *Norwegian* being held for 180s. per barrel.

COLOCYNTH.—Privately there have been sales this week of good *Spanish* at 1s. per lb. 1 case *Spanish pulp* sold at 5s. per lb.; good apple held at 1s. 2d., and good small at 9d. per lb.

COLOMBO ROOT.—Five bags good washed were held for 40s., very fine bold washed for 55s. per cwt.

CREAM OF TARTAR.—Rather easier at 84s. for *crystals*, and 86s. for *powder* of first quality.

CUMIN SEED.—47 bags, chiefly taken out at 22s. 6d. to 24s.; 6 bags sold at 23s. per cwt.

DRAGON'S BLOOD.—Medium quality was taken out at £6 to £6 10s. per cwt.; dark sold at 80s.; good bright lump fetched £10; fair bright, £9; fair lump bought in at £7 per cwt.

GALLS.—470 bags *Bagdad* bought in at prices ranging from 42s. 6d. to 52s. 6d. per cwt.

GAMBOGE.—17 cases were held for £7 10s., for fair softish pipey, fair mixed bought in at £9 5s. per cwt.

GINGER.—*Cochin* in slow demand at about the prices hitherto ruling. *Limed Japan* held for 16s. per cwt. *Jamaica* scarce, and 90s. has been paid for low middling.

GUAZA. — 10 robbins good tops, part slightly stalky, bought in at 4d. per lb., 3½d. being the price which would be taken, while eighteen bales, without reserve, part good tops, part brown, and rather stalky, were sold at 2¾d. per lb.

GUM ARABIC.—Ten bales good sorts were

bought in at 95s., price which would be accepted being, however, 90s. per cwt.; pale grain to yellowish picked, bold, held for £7; medium grain for £6 10s., and good white picked for £10 5s. per cwt.

Gum, Benzoin.—*Sumatra* seconds fetched £5 15s. per cwt., inferior held for £4 10s. to £5, good free *Siam* taken out at £20, grain and blocky clean seed sold at £7 17s. 6d., good free bean size at £11 5s., dark block held for 45s., good *Palembang* held for 30s., lower quality 22s. 6d. to 25s. per cwt.

Gum Elemi.—Forty-three cases were held for 22s. per cwt.

Gum (Guaiacum).—This article is said to be getting scarcer, in sale 8d. per lb. was bid for fair glassy, 11d. being the price asked, while good glassy was bought in at 2s. of 8 cases fair block, and broken glassy sold at 1s. 2d. to 1s. 4d. per lb., subject to approval, very low drossy at 3d. to 4d.

Gum Kino.—One case bought in at 8s.

Gum Myrrh.—Of 10 bales part sold at 39s. per cwt. For rather low quality 25 cases taken out at 80s. for fair native picked. Of 33 packages good small picked sold at 82s. 6d. to 85s., and without reserve dark pickings at 20s. per cwt.

Honey.—Of 25 casks *Italian* 1 cask sold at 20s., and 5 casks dark at 19s.; remainder held for 22s. 6d. to 25s. per cwt. *Jamaica* of good flavour sold at 24s. to 28s. per cwt.

Hydrastis Canadensis—Is in better demand, and prices from America are quoted higher at 1s. 1d. per lb.

Ipecacuanha.—In sale fair *Rio* fetched 5s. 9d., good first class *S.D.* brought 5s. 10d., and second class *S.D.*, 5s. 7d. A considerable portion was bought in at 5s. 9d. to 6s. 3d., and at 6s. 6d. for picked. *Carthagena* fetched 3s. 10d. to 3s. 11d. per lb. Looking at the better quality of what was offered in today's sale, these figures would show slightly easier prices.

Jaborandi Leaves—Continue to arrive freely, although good quality does not form the bulk.

Jalap.—Fair small heavy taken out at 7d. per lb.

Kola Nuts—Dull held for 4d.; 4 bales good bright taken out at 10d. per lb.

Lithia Salts.—The two makers who control the market have advanced their price to 9s. 4d. for 2-cwt. lots (price for less than 28 lbs. being 9s. 9d. per lb.) for the *carbonate*. Price of the *citrate* is unchanged. Object of the advance being to completely knock out the English makers of the *citrate*.

Liquorice (Root).—Low grade *Persian* is obtainable at 7s. 6d. per cwt., while for fair 16s. to 18s. is asked, and for *decorticated Russian* 38s. to 45s. In sale 69 bales were held for 6s. to 7s. 6d. per cwt.

Oils (Essential).—From the South of France it is reported that "Essences de Montagne," *i.e.*, *Lavender*, *Spike*, *Thyme*, etc., are showing a very firm tendency, good qualities being scarce, and in active demand. *Star aniseed*: Reports from China are very divergent as to the new crop, but generally it is thought that under any circumstances we shall see a strong market for the greater portion of the coming season of demand. On the spot the price is very firm at 9s. 3d. per lb., but business is from hand to mouth; 7s. 9d. per lb. *c.i.f.* is the quotation for Oct.-Dec. shipment, and 9s. per lb. near at hand. *Cassia*: The better qualities are exceedingly scarce on the spot, and cannot be quoted—for 55-60 per cent., 7s. 9d. per lb., and for 45-50 per cent., 6s. 9d. per lb. are the prices, whilst for arrival, 8s. 9d. per lb. is quoted for 75-80 per cent., and 9s. 6d. for 80-85 per cent., *c.i.f.* terms. *Peppermint.—Japan*: Is firmer, business in dementholised for Sept.-Nov. shipment having been done at 3s. 1½d., and 40 per cent. quoted 4s. 4½d. per lb. *c.i.f.* Of 10 cases *Kobayashi dementholised* 5 cases old at 3s. 6d.; remaining 5 cases were bought in at 3s. 9d. per lb. *English Peppermint oil* is quoted 32s. per lb.

Oil, Eucalyptus.—*Globulus* taken out at 2s.; ditto *Platypus* brand; 50 per cent. *Eucalyptol* guaranteed, held for same price.

Oils (Fixed) and Spirits.—*Castor*: The advance continues, best *Italian* being quoted 40s. per cwt. on the spot. *East Indian* is also improving in value. *Cotton-seed*: Steady, ordinary refined 16s. 6d. to 17s., sweet yellow 17s. 6d., and white 20s. to 20s. 6d. per cwt. *Linseed*: Raw 16s. 6d. to 17s. 6d., boiled 17s. 9d. to 18s. per cwt. *Rape*: Brown 26s. 6d. to 27s., and refined 28s. to 28s. 3d. per cwt. Holders are very firm. *Coconut*: Firm. *Ceylon* on spot 24s. 6d. per cwt. *Palm*: *Lagos* on spot 25s. 6d. per cwt. *Turpentine* is very flat. *American* on the spot 21s. 3d. with higher prices for forward delivery. *Petroleum Spirit*: *American* 7⅜d. to 8d., with *deodorised* 8d. to 8¼d.

Orris Root.—*Florentine* is a firm market, prices for arrival being steady at 68s. per cwt. for selected, and 62s. to 64s. for sorts. Of 103 bales *East Indian* part sold prior to sale, balance held at 10s. to 15s. per cwt. Five bags fair *Florentine* bought in at 80s. per cwt.

Otto Rose.—The *DP* brand has been reduced to 22s. to 24s. per oz. for quantity.

Pilocarpine.—The principal makers have reduced their quotations to 65s. per oz., or 2s. 6d. per gramme.

Potash Compounds.—*Chlorate* continues very dull and unchanged at 4d. per lb. on the spot. *Prussiate* (yellow) easier at 6¼d. per lb. for *English*, except *Beckton*, which is quoted at 6d. per lb. *Permanganate*—Position unchanged, but it seems possible that for spot delivery a scarcity will again make itself felt.

Quicksilver—Is easier at £6 11s. 6d. per bottle.

Quince Seeds.—Two bags from *Cape* were bought in at 1s. 3d. per lb.

Quinine Sulphate.—Foreign makers have reduced their price to 9½d. per oz. for contracts, the English makers quoting ½d. per oz. more. This reduction is apparently directed against the new French competition.

Rhatany Root.—Eleven bales bought in at 1s. per lb.

Rhubarb.—Six cases *flat high dried* were taken out at 10d. per lb. Of 31 cases 4 cases fine round *Canton* sold prior to sale at 1s. 1d.; flat *high-dried* part sold at 10d. Round *Canton* held for 1s., and flat ditto at 10d.; fair flat *Shensi* bought in at 1s. 10d.; medium round at 1s. 8d.; good bold flat, part sold at 2s. 9d., balance bought in at 3s.

Rose Oil.—5 pots held for 3½d. per oz.

Saffron—Remains very firm, and holders talk of higher prices, one agent quoting 40s. per lb. for finest *Valencia*.

Salol.—Reduced price following reduction in salicylates is 3s. 2d. per lb.

Sarsaparilla.—Eighteen bales *Jamaica* sold at 1s. 9d. per lb., first class SD at 1s. 8d., second class SD at 1s. 7d. *Hinduras* bought in at 1s. 4d. per lb.

Scammony.—*Virgin* is in better supply, and *firsts* are quoted 30s. per lb., while *seconds* range from 20s. to 25s., according to quality. In sale 13 cases were bought in on about above basis.

Scammony Root.—In sale 56 bales were held for 35s. per cwt., but did not find buyers.

Senna.—*Alexandrian*: Privately sales of fair, slightly broken leaf have taken place this week at 9d. per lb. In to-day's sales 34 packages were offered. *Tinnevelly*: At the sales this quality was in large supply, which met with good competition. Prices were rather firmer for the lower grades at 1½d. to 1¾d. per lb., while medium-sized leaf of good colour was dearer at 3½d. to 5d. per lb.

Senega Root.—The crop is stated to be about one-fourth of that of last year, and the market in New York is steadily advancing. It is quoted rather firmer for shipment; in sale 8 bales were bought in at 1s. 6d. per lb.

Shellac.—At Tuesday's public sales a fair demnnd prevailed for the moderate supplies catalogued, prices showing an advance of about 2s. per cwt. Out of a total of 726 cases offered, 405 cases sold. *Fine Orange* all bought in. *Fine Second Orange*: 54 cases offered, and 27 sold, good reddish at 86s. to 89s. per cwt. *TN Orange*: Of 502 cases, 302 sold, fair palish free at 84s., fair reddish at 81s., reddish livery at 79s., broken livery 76s. to 77s., ordinary dark red to good bright, but all more or less cakey and blocky, 75s. to 81s. per cwt. Privately business on the spot has been small at firm prices, for arrival sales of *Second Orange*, November to January steamer, have taken place at 79s. per cwt., but the market closes firmer at 80s. per cwt.

Soda Compounds.—*Crystals* steady at 42s. 6d. per ton, *ex* ship. *Caustic*, £8 for 70 per cent. white. *Bicarbonate* unchanged as £7 5s. per ton.

Spices (Various).—*Nutmegs* steady at about previous rates. *Mace* unaltered. *Black pepper* firm and somewhat dearer. *White pepper* firm but quiet. *Chilies*: dull.

Strophanthus Seeds.—One bag low damaged *Kombé* sold without reserve at 1s. 1d. per lb.

Tamarinds.—Eighty-one packages *Antiguan* held for 8s. 6d. per cwt.

Terra Japonica.—*Cutch*: Sales have been light this week, ordinary block changing hands at 13s. 6d. to 14s. per cwt., and inferior slabs, 9s. 6d. to 10s. 6d. cwt. *Gambier* is very firm, there being no sellers at quotations.

Tonquin Beans.—1 cask black sold at 1s. 8d. per lb.

Tonquin Musk.—Twelve tins taken out at 28s. for low to 52s. for fair quality.

Turmeric.—A good business has been done privately at rather dearer rates. *Bengal*, 7s. 6d. to 7s. 7½d., closing buyers at 7s. 9d. per cwt., but no sellers. *Madras*, good to fine finger at 12s. to 13s.; and *Cochin* finger at 9s. per cwt. At the drug sales 45 bags fair finger *Madras* were taken out at 10s. 6d. per cwt.

Vanilla.—Owing to the large quantity up for sale, viz., about 800 tins, same will

be offered to-morrow. The assortment consists almost entirely of *Seychelles* of good quality, and it is anticipated that at least slightly easier prices are likely to rule.

Wax.—In sale fair *Australian* sold at £6 5s., and good at £6 10s. per cwt. One case very mixed sold £5 7s. 6d., subject to approval. Good *Zanzibar*, part sold subject to approval, at £6 2s. 6d. One bag lower quality at £5; remainder chiefly bought in at £6. *Madagascar* part sold at £6 per cwt. for slightly wormy, balance held for £6 5s. 7 bags *Portugnese* taken out at £7 15s. *Spanish* at £7. *Jamaica* realised £7 15s. for fair middling, £8 5s. for good, and £8 10s. for fine. *Carnauba*: 17 bags held at 65s. per for dark grey, and 75s. for partly yellowish.

Ylang Ylang.—Four cases bought in at 3s. and two cases at 4s. 6d. per oz.

NEWCASTLE REPORT.

October 28, 1896.

This section of trade does not move in keeping with general industry. Rather the reverse, for the output this way and on the west coast is being reduced. The only matter of moment is the increased scarcity of sulphur and alkali, and higher prices asked in consequence. Quotations are:—*Sulphur*: £5. *Refined alkali*: 52 per cent., £5 5s. *Bleaching powder*: £6 10s. to £7 10s. *Soda crystals*: 37s. 6d. to 45s. *Caustic soda*: 70 per cent., £7 5s. to £7 10s. *Soda ash*: 52 per cent., £4 5s. per ton.

LIVERPOOL REPORT.

October 28, 1896.

Business in drugs has not been of a very varied character during the week, but has been steady with a generally better inquiry and firmer tone in prices of linseed, canary-seed, castor and olive oils, and resin, due to short supplies and no inclination for business at present rates on the part of sellers.

Balsam of Copaiba.—7 barrels of good *Maranham* were sold at auction at 1s. 10d. per lb.

Bicarbonate of Soda—Is now at £7 per ton.

Bichromate of Potash—Still remains at 4⅝d. per lb.

Bleaching Powder—Has advanced to £7 and £7 5s. per ton in hard wood casks, *f.o.b. Liverpool.*

Borax.—20s. per cwt.; 21s. *powder.*

Canary Seed—Experiences a good inquiry, for *Turkish* sellers are asking 30s. to 31s. per 464 lbs., and 190 bags have been sold at 30s., and 150 bags "to arrive," at 28s.

Caustic Soda—Is steady and somewhat quiet at £7 10s. to £7 12s. 6d. per ton for 70 per cent., and £6 10s. to £6 12s. 6d. for 60 per cent.

Chlorate of Potash.—Spot value 4¼d. per lb.; for next year's delivery 4⅛d.

Copperas.—Lancashire in good demand at last week's rates, 38s. per ton.

Cream of Tartar.—Notwithstanding the recent high prices of finest white cream it is gradually returning to a normal condition, and although 87s. 6d. per cwt. is asked, buyers would have no difficulty in getting easier terms.

Linseed—Is passing off quickly, all the *Turkish* arrivals have been sold on the quay at or about 34s. per 416 lbs., and sellers are asking an advance on this of from 1s. to 2s.

Nitrate of Soda—Offers nothing of interest, remaining at its late rate of 7s. 10½ to 8s. 1½d. per cwt.

Oils (Fixed) and Spirits.—*Castor oil* is very strong in tone, and the three varieties, *Calcutta* "good seconds," *French* first pressure, and *Madras* are at 3¼d. per lb., with a disposition to hold for even higher rates. *Olive oil* is steady in tone with good inquiry, and fair sales, mostly of *Spanish* and *Candia* oils, at fully late prices. *Linseed oil*, *Cotton-seed oil*, and *Spirits of Turpentine* are unchanged from last week, and are all somewhat quiet.

Pearlash and Potash are merely nominal at recent rates.

Sal Ammoniac.—37s., first quality; 35s., second, per cwt.

Spermaceti.—Thirty cases of *Chilian* have found buyers at 1s. 4d. per lb.

Turmeric has been selling slowly, mostly *Bombay* "finger," on private terms.

MANCHESTER REPORT.

October 27, 1896.

The impression gains ground that with restricted output consequent on the closing of a number of works in Lancashire, and also to some extent the discharging of hands at the Cheshire works, there will be no further reduction in prices of *Alkalies.* In some respects this is true of sales on home account, but for export almost all prices are being accepted, especially for *Caustic soda.* For prompt 58 per cent. *Ammonia alkali* the figure remains at £3 7s. 6d. per ton, on rails, prompt delivery. *Soda crystals* are dull at 37s. 6d. per ton in bags. *Chlorate of soda* is in better demand at the reduced prices—5d. for export, and 5¼d. home consumption. *Brown acetate of lime* is firmer at £4 5s. to £4 7s. 6d. per ton for *Welsh* at station, Manchester; *American* quoted £4 *c i f.* Ship Canal. *Sulphate of ammonia* continues to decline; *Leith* is quoted £6 17s. 6d. to £7 1s. 3d., Leith. *Pitch* is lower, being quoted 27s. to 28s. *f.a s.* Salford docks. *Saltcake* dull and as low as 19s. for prompt, in bulk, on rails; 22s. forward. In *Green copperas* values are fully maintained, but *Arsenic* is fully 5s. per ton lower. *Sulphate of copper* is firmer, £16 5s. to £16 10s. For next year sellers do not care to quote. *Yellow prussiate* about a farthing lower for *Lancashire* make.

MANCHESTER PHARMACEUTICAL ASSOCIATION.

A most successful smoking concert was held in connection with the above Association in the large room of the Victoria Hotel, Manchester, on Friday evening, October 23, the chair being taken by Mr. G. S. Woolley, President of the Association. During the evening Mr. Woolley referred to the excellent syllabus arranged for the present session, and expressed a hope the meetings would be well attended by members of the craft. He also took the opportunity of asking for their votes and interest on behalf of Mrs. Linford, an applicant for help from the Benevolent Fund. Many in the room would remember Mr. Linford as an examiner of the Pharmaceutical Society. Unfortunately his widow is left in need of help, and it is hoped that through the channel of the Benevolent Fund something may be done to afford her some little comfort in her old age.

Songs were sung by Messrs. Burch, Chapman, Evans, Franklin, Peel, Price, Rawsthorne, and others, some very amusing recitations being given by Mr. R. Dottie. Two violin solos by Mr. Felix Berlyn, and a violin and flute duet by Miss L. Cohen and Felix Berlyn, were rendered with great taste and much appreciated.

A vote of thanks to the Chairman was proposed by Mr. Alderman Gibson, who referred to the very many years that Mr. Woolley had devoted himself to the working of the Association, and hoped that all present would lend him their support during the session now commenced.

Mr. Woolley briefly responded, and a very pleasant evening was closed at eleven o'clock by singing "God Save the Queen."

MARRIAGE.

Anthony—Tank.—October 20, at the parish church, St. Austell, by the Rev. Canon Hammond, Thomas Anthony, pharmaceutical chemist, Truro, son of Captain Anthony, Pentewan, to Maggie Brewer, daughter of the late Mr. Thomas Tank, Grampound Road.

NEWS IN BRIEF.

Medicine over Strength caused Henry Symonds Tucker, chemist, Great Hampton Row, Birmingham, to be summoned at the Birmingham Police Court last week, the charge being for selling tincture of iodine which contained 74 per cent. of iodine and 17 per cent. of iodine of potassium in excess of the quantities required by the British Pharmacopœia.—Dr. Alfred Hill said that the danger was that persons who were prescribed for got the drug much too strong.—Defendant said that the article was above its strength owing to the spirits having evaporated.—The Bench said that there was no intention to defraud, and they thought the case would be met by defendant paying costs, 6*s.*

Mr. James Clarke, pharmaceutical chemist, formerly of The Pharmacy, King Street, Hammersmith, London, was among the successful candidates who passed the final examination of the Royal College of Surgeons and Physicians held in London last week.

Mr. George Weddell, the inventor and maker of "Cerebos" salt, is the subject of an article in a series on "Men who Interest Women," published in *Woman's Life.* But why interest women only, Mr. Weddell?

Mr. N. M. Grose, of Swansea, Member of the Pharmaceutical Council, has been appointed Senior Warden of the Provincial Grand Lodge for the Eastern Division of the Province of South Wales.

EXCHANGE—OFFERS AND WANTS.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Books, etc.

Pamphlet on Soap-making, Bleaching Fats, Oils, etc., Manufacturing Dry Soaps, Ammoniated Washing Liquor, Soda Crystals, 1s. 6d. Send for list, Receipts in the Arts and Manufacture.—Garforth, Chemist, Sheffield.

Pharmaceutical Journal from commencement in 1842, with all portraits, 15 vols., half calf, 21s. Wanted, Gray's 'Supplement to the Pharmacopœia,' any edition. State price free.—Davis, "Chestnuts," Gordon Hill, Enfield

Matthiolus, 'Materia Medicinale,' thick folio volume, vellum, hundreds of woodcuts, fine, rare, 21s., Venetia, 1560; 'Medical Botany,' two large vols., 138 coloured plates, 17s. 6d., published £4 4s.—Davis, "Chestnuts," Gordon Hill, Enfield.

A book of 130 Well-tried Recipes for Chemists and Druggists, comprising well-selected formulæ for general, remedial, veterinary, toilet, and everyday preparations. Post free, 1s. 6d.—Tully, Chemist, Hastings.

Miscellaneous.

Surplus Stock.—7 lb. pulv. extract coloc. co., in 1 lb. lever lid tins; 1 lb. and upwards at half wholesale drug-list price; in perfect condition.—Worsley, Chemist, Market Place, Wigan.

What offers? Almost new, 'Pharmacographia,' Ganot's 'Physics,' Remsen's 'Organic Chemistry,' Attfield's 'Chemistry,' 13th edition, Burette and stand, complete, in good condition.—Paterson, Chemist, Victoria Road, Dundee.

Shop Fittings, etc.

Set mahogany drawers, 16 ft. long, 97 drawers, spaces for medicine bottles; mahogany desk with glass-case front.—W. Heffer, Fitzroy Street, Cambridge.

Range mahogany-fronted drawers (110), with massive mahogany slab on top; mahogany upright glass case, 10 ft. long; best make bent counter case, 6 ft. long. Cheap.—Presley, Chemist, Bristol.

Photographers as Chemists — Photographers seem at the present time to be much exercised in their minds as to the working of the Pharmacy Act, and many hard things have been said of chemists, but in a little work just issued by a well-known firm of dry plate makers and "photographic chemists," occurs the following passage anent backing plates:—"Caramel can be bought at the chemist's under the name of saccharum ustum. *It is the active principle in nearly all medicines.*" The sentence here printed in italics seems to afford an opening for reply.

Mr. John Brooks, chemist and druggist, of Broadway, East Ham, was recently accorded the hearty thanks of the East Ham District Council for his services as treasurer to the Fatality Fund Committee, the success of the fund being largely due to his efforts.

Royal College of Physicians, Dublin.—Among the annual appointments made by the College on October 19 (for St. Luke's day, which this year fell on Sunday) are:—Dr. George F. Duffey, formerly a pharmaceutical examiner, and for several years Government Visitor to the Irish pharmaceutical examinations, to be President; and Dr. Ninian Falkiner, the Pharmaceutical Society's Professor of Materia Medica, to be Examiner in Materia Medica and Pharmacy to the College.

Roscommon Guardians in Trouble.—The Local Government Board has dropped heavily on the guardians of the Roscommon Union. Recently tenders for drugs and medicines were invited, and although a number of quotations for supplies were received, the guardians resolved to accept the highest tender, sent in by Mr. Phillips, a Roscommon chemist, for no apparently good reason. The Local Government Board now informs the guardians that in consequence of the grossly improper course followed, no valid contract can be made with Mr. Phillips, and that any guardian authorising payments to that trader will be liable to be personally surcharged. The guardians must again advertise for tenders and appoint a contractor in the ordinary and legal way. The guardians complain bitterly, but they are complying.

Pharmaceutical Football Club.—On Saturday last the above team played the Melrose Rovers at Hendon. After a very fast game the visitors left the field victorious. Scores: Pharmaceutical, 7; Melrose Rovers, 2.

Team:—Lean, goal; Webster and Smith, backs; Nelson, Miles, and Happold, half backs; Day, Matthews, Fothergill (captain), Tebbutt, and Jones, forwards.

Day made several brilliant runs, scoring twice, while Miles at half-back gave an exhibition of almost faultless play. Lean, cool and trustworthy as ever, saved the team in one or two very critical situations. To Fothergill fell the honour of two of the goals, while the other forwards, Matthews, Tebbutt, and Jones, each scored one.

Mr. George Turton Green, chemist and druggist, of Stourbridge, has taken over the business lately conducted by Mr. C. J. H. Batchelor, 41, Bell Street, Henley-on-Thames.

Powell's Balsam of Aniseed has now been added to the P.A.T.A. list of protected articles (see *ante*, p. lxxii.).

LATE ADVERTISEMENTS.

Assistant Wanted.

A THOROUGHLY capable, experienced and qualified Manager for Dispensing business in West-end. Not under 30. Unmarried, and be prepared to take entire responsibility. Salary £100 per annum, with residence and share in profits. Write to A. A., Willings, 162, Piccadilly.

Businesses for Disposal.

FOR disposal.—Shop Fittings and Stock of a West-end Druggist. Apply to Messrs. Mackey, 175, Grange Rd., Bermondsey, S.E.

GENUINE Business. Family trade and Shipping connection. Convenient corner premises. Long lease. Low rent. Nearest chemist to the principal dock. Low price will be accepted. For further particulars, apply Z, 9, Fabian St., St. Thomas, Swansea.

DIARY OF THE WEEK.

Secretaries of Societies are requested to send notices of forthcoming meetings not later than Wednesday in the previous week.

Saturday, October 31.

Pharmaceutical Football Club *v.* Crownfield Club, at Wormholt Farm, Shepherds Bush. Kick off at 3 o'clock.

Monday, November 2.

Society of Chemical Industry (London Section), at Burlington House, at 8 p.m.
(1) "The Production of Inoculating Materials for Use in Agriculture (Nitrogen)," by Dr. J. A. Voelcker, F.I.C., F.C.S.
(2) "The Smelting and Refining of Cyanide Bullion," by Arthur Caldecott, F.I.C., F.C.S.

Proprietary Articles Trade Association, at 3 p.m.
Meeting at the Memorial Hall, Manchester, Mr. G. S. Woolley in the chair.

Tuesday, November 3.

Midland Pharmaceutical Association, at 8 p.m.
Reception, President's Address, and Conversazione and Dance at the Grand Hotel.

Pharmaceutical Society, at 2.30 p.m.
Meetings of Committees.

Wednesday, November 4.

Brighton Junior Association of Pharmacy, at 8 p.m.
Seventh Annual Dinner, Booth's Restaurant, East Street.

Midland Chemists' Assistants' Association, at 9 p.m.
"Photography: Its Relation to the Chemist," by F. Foster.

Pharmaceutical Society.
Council Meeting.

Thursday, November 5.

Chemical Society, at 8 p.m.
Miscellaneous Papers.

Chemists' Assistants' Association, at 8.30 p.m.
"Biological Science, its History and Development," by T. Morley Taylor.

Glasgow and West of Scotland Pharmaceutical Association.
"At Home," Cockburn Hotel; Reception by President and Council.

Linnean Society, at 8 p.m.
"Mediterranean Bryozoa," by A. W. Waters.
"On Some New Species of *Crassula* from South Africa," by Dr. S. Schonland.
"Holothurians of New Zealand," by A. H. Dendy.

Friday, November 6.

Geologists' Association (London), at 8 p.m.
Conversational Evening and Exhibition of Objects of Geological Interest at the Library of University College.

Market Report

And Prices Current of Drugs, Chemicals, Oils, and Seeds.

The quotations here given are in all cases the lowest net cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

[Specially Compiled for the 'Pharmaceutical Journal.']

LONDON REPORT.

LONDON, NOVEMBER 5, 1896.

Business appears at last to have taken a turn for the better, although actual transactions during the week have been limited. The result of the American Presidential Election means, it is to be hoped, the turning point in American trade, which includes of course, the export trade in drugs and chemicals to America from this side. Sulphate of ammonia is tangibly dearer. In camphor the expected advance has taken place, otherwise there are few changes of importance to chronicle. In quinine a considerable business has been done at the low price now ruling. Morphia is very quiet, and the anxiety to sell evinced by some second-hand holders may perhaps point to a possible reduction shortly in makers' prices. Cocaine, in view of large supplies of the crude, a further reduction in price of the refined article would appear at least possibly. Glycerin is in active demand. As regards senna, it may be noticed that the deliveries of Tinnivelly have been very heavy this month, and notwithstanding the large arriva's, practically the whole has passed into consumption, the position of the article remaining, therefore, strong. Stocks of quinine are materially reduced, and it is fully expected that better prices will again rule as soon as the makers have settled their little dispute and come to terms with each other. Castor oil remains firm, helped no doubt by the fact that deliveries have been heavy. Of shellac the deliveries have also been good, mainly, apparently, for America. The following are prices ruling for articles of chief interest:—

ACACIA (GUM).—Fine *Turkey* sorts are in fair demand, and other qualities are steady. The knowledge that no further advance beyond Dongola will take place until next season makes holders more inclined to ask higher prices. For good sorts 85s. to 95s. per cwt. is asked, according to quality. The auctions passed without change in prices.

ACID CARBOLIC.—*Crystallised* is steady, but without change in value, same applies also to *crude*, while for *liquid* 95 per cent., 1s. per gal. is now asked.

ACID CITRIC—Is very quiet at 1s. 1¾d. per lb. for foreign, to 1s. 2d. per lb. for commercial *English*. The B.P. acid is held for 1s. 2¼d. to 1s. 2½d. per lb. as to quantity.

ACID TARTARIC.—*English*, 1s. 2d.; *foreign*, 12¾d. to 1s. 1d. per lb. Market dull.

AMMONIA COMPOUNDS.—*Carbonate* quiet, at 3d. per lb. in casks, 3⅛d. in kegs, and 3¼d. in jars. *Sulphate*: The market is excited, but quotations on the spot are nominal at £7 7s. 6d. to £7 10s. for *gray* prompt 24 per cent. London. A large business has been done for forward delivery, April to June, at £7 15s., and £8 is now asked. *Sal ammoniac*, firsts, 37s.; seconds, 35s. per cwt.; *crushed* (for batteries), 37s. to 39s. per cwt., and *powdered*, 39s. to 41s. per cwt. *Muriate*, white granulated, 28s. 6d. per cwt.

ARSENIC.—White *powder* is quoted 23s. to 23s. 6d. per cwt.; *lump*, 28s. to 29s. per cwt.; *red*, 28s. to 30s.; *yellow*, 27s. 6d. to 28s. per cwt.

BALSAMS.—*Canada* is quoted at 1s. per lb.; *copaiba*, 2s. to 2s. 2d.; *Peru*, 3s. 3d. to 3s. 6d.; *tolu*, 7s. 9d. to 8s. per lb.

BLEACHING POWDER—Rather easier at £7 to £7 10s. per ton on the spot.

CACAO BUTTER.—At the monthly auctions this week 45 tons block of Cadbury's make sold at slightly lower prices—1s. 1⅛d. to 1s. 1¼d. per lb.—chiefly at the former rate. 5 cases of 3-oz. cakes were also offered and sold at 1s. 2⅝d. per lb.

CARDAMOMS—Continue in demand, and a parcel of fair bold pale *Ceylon Mysore*, which last week changed hands at 4s. per lb., has since been resold at 4s. 6d. per lb.

CAMPHOR (REFINED).—Both English and foreign refiners have this week raised their prices 1d. per lb., quotations being now:—*Bells* and *flowers*, 1s. 8d. per lb.; 4, 8, and 16-oz. *tablets*, 1s. 9d. per lb.; 1 and 2 oz. *tablets*, 1s. 10½d. per lb.; ½-oz. *tablets*, 1s. 11d.; ⅓ and ¼-oz. *tablets*, 1s. 11½d. per lb.; ½-ton lots, ½d., and 1-ton lots, 1d. per lb. less. *Crude* is quiet, without business, and prices, therefore, are nominal.

CLOVES.—Privately *Zanzibar* are firm, with sales to arrive of about 600 bales, chiefly January-March delivery, at 2⅞d. per lb. At auction only 372 bales of this kind were offered, and 100 sold; middling dark, 2⅛d. per lb. *Amboyna* bought in at 4d. *Penang* quiet, 3 cases fine bright sold 7¼d. per lb.

COAL TAR DISTILLATION PRODUCTS.—*Toluol* is quoted 2s. 2d. per gallon. *Benzole*: 50 per cent., 3s. 3d.; 90 per cent., 4s. 6d. per gallon. *Crude naphtha*: 30 per cent. at 120° C., 1s. 6d. per gallon. *Solvent naphtha*: 95 per cent. at 160° C., 1s. 9d.; 90 per cent. at 160° C., 1s. 6d.; 90 per cent. at 190° C., 1s. 2d. per gallon.

COD LIVER OIL is decidedly firmer, although so far not much business has been done this week. *Norwegian* of fine quality is held for 175s. per barrel, but it is thought that American buyers will soon have to come on the market, when prices are expected to go dearer.

COLOCYNTH.—Stocks of *Turkey* apple are increasing, and holders would be willing to accept slightly lower rates. A few small sales have taken place at 2s. 3d. to 2s. 5d. per lb.

CREAM OF TARTAR—Lower at 83s. per cwt. for *white crystals*, and 85s. per cwt. for good *powder*.

DIGITALIS LEAVES—Are exceedingly scarce, and higher prices are quoted. For good leaves 35s. per cwt. is asked.

GINGER.—At auction this week prices were very flat. Of 795 bags *Cochin* 380 bags sold at irregular prices, ordinary small and lean rough, 28s.; inferior lean, 26s.; ordinary dull medium and small washed rough, 29s. to 29s. 6d.; good fair bright, 31s. 6d. per cwt. Of 205 cases 70 only sold, chiefly limed native kinds, small, part cut, 44s.; *B* cut, 73s. per cwt. Small rough *Penang* bought in at 40s., and limed *Japan* at 20s. per cwt.

GLYCERIN.—The demand for the refined has been very active, and manufacturers are busy delivering against old contracts, but for future delivery the enquiry is slow, and prices remain steady as last quoted.

GUAIACUM.—A cask of good glassy block offered in last week's sales, but withdrawn, has since been sold at 1s. 6d. per lb.

IODINE—Remains unchanged at 9d. per oz. Prices of the combined manufacturers of iodine preparations are as follows:—*Potass. iodide*, 11s. 6d. per lb. for 2 cwt. lots; *sodii iodide*, 13s. 3d. by 28 lbs.; *iodoform*, 15s. 6d. by 28 lbs.; *iodine*, resublimed, 13s. 6d. per lb. for 28 lbs.

KOLA NUTS.—At the spice sales 5 bags dark *St. Domingo* bought in.

MENTHOL—Is quiet, spot, 7s. 6d. to 8s. per lb., according to quality and brand, to arrive 7s. is asked.

MORPHIA.—Makers' prices are so far unchanged, but there appears to be a pressure to sell on part of weak-kneed, second-han holders, who would apparently be willing to undersell makers not inconsiderably.

Oils (Essential).—*Star Anise*, on the spot small sales have been made at 8s. 6d. to 8s. 9d. per lb., with quotations for arrival Oct.-Nov. steamers, 7s. 3d. to 7s. 4½d. per lb. *c.i.f.*; second hands, however, offer at rather less for this position. *Cassia* continues firm, 80 to 85 per cent. 9s. per lb., 70 to 75 per cent. 8s. 6d. per lb. *c.i.f.* terms. *Peppermint*: A large business in *H.G.H.* has been done at 7s. 9d. per lb. on the spot and 7s. 6d. per lb. for arrival. *English* unchanged at 32s. to 33s. per lb., according to quantity. *Lavender*: English strong at 90s. to 95s. per lb. *Eucalyptus* is in good demand, *Globulus* 2s. to 2s. 2d. per lb. according to brand, other qualities have changed hands at 1s. 4d. to 1s. 5d. per lb.

Oils (Fixed) and Spirits.—*Castor* continues very firm, and higher rates are anticipated, owing to the difficulty of obtaining good seed, which, in consequence of the rainy season, has much suffered. *Linseed*: The market is firmer for forward delivery. Spot is quoted £16 10s. in pipes and £17 2s. 6d. in barrels. *Rape* is firm. Refined on spot £28 10s. *Cotton*: Steady. Refined £16 15s. to £17 15s., according to make and package. *Olive*: Spanish £30, Levant £29 10s. *Coconut*: Steady. Spot *Ceylon* £24, spot *Cochin* £28 10s. *Turpentine* is dearer and very firm at the advance, *American* on the spot 21s. 1½d. to 21s. 3d. per cwt., and higher prices asked for later delivery. *Petroleum*: Firm. *American* on the spot 5⅞d., *water white* 7d., *Russian* spot 5½d. per gallon.

Opium—Is very quiet, and no sales of importance have taken place this week. Fine *druggists'* quoted 10s. 6d. to 11s. 6d.; medium, 9s. 6d. to 10s. per lb.

Orris Root.—Latest advices from Leghorn state that the greater portion of this year's crop proves to be badly damaged, and that there is consequently every prospect of materially higher prices in the near future. Prices are quoted higher at 69s. per cwt. for selected *Florentine* and 65s. for sorts, whilst *Verona* root is quoted 58s. and 54s. per cwt. for picked and sorts respectively.

Otto of Rose.—It is evident that no fixed price has yet been arranged, we should not be surprised to see later on slightly lower rates.

Potash Compounds — *Chlorate*: The competition between the English and Swedish makers continues, and whilst 4d. per lb. remains the nearest spot price, the latter make has been offered to America at 3¾d. per lb., *c.i.f.*, New York. It is thought that this touches the probable lowest. *Citrate* is lower at 1s. 2d. per lb. *Tartrate* also lower at 1s. 6d. per lb. *Bichromate* steady at 4¾d. per lb. *Prussiate* quiet, but unchanged, at 6¼d. per lb. for English. *Permanganate*: Market is quiet, but any renewed demand would probably show that the article is scarce for spot delivery. *Cyanide*: 99 per cent. quiet at 1s. 1d. per lb., 50 per cent. 1s., and 30 per cent. 7d. per lb.

Quicksilver—Unchanged at £6 12s. 6d. per bottle from first-hands, and 1s. less from second-hand dealers.

Quinine Sulphate.—A good many contracts have been made by the various manufacturers at the late reduced prices, whilst second-hand holders are offering at ¼d. per oz. less; but majority of buyers prefer contracts with makers at the higher price to taking the risk of loss in weight on old parcels.

Roots.—*Belladonna*, 40s. to 42s. 6d. per cwt. for good; *aconite*, 34s. per cwt.; *angelica*, twisted, 35s. per cwt.; *dandelion*, 26s. to 30s. per cwt. as to quality; *gentian*, 25s. per cwt.; *golden seal*, 1s. per lb.; *mandrake*, 24s. 6d. per cwt., but very scarce.

Saccharin.—The dispute as to the right of sale of the article in England continues, but the legal proceedings threatened so freely on one side, do not appear to have been so far carried much further than the initial stage, although in this direction we are promised further developments, the result of which will probably prove highly satisfactory to the lawyers, while in the wordy warfare which is being carried on by circular (with special reference to the Brewers' Exhibition at the Agricultural Hall, now in full display) the promises which are being held out give hope of benefit to the consumer in shape of largely reduced prices for the article. What the actual lowest prices now really are is somewhat difficult to ascertain, the nearest we have been able to learn being "fifty per shent. below any other dealer." It also appears that there are other makers in the field, who state that they will shortly be in a position to offer an even better article than that of either of the two contending makers referred to above, under a different name it is true, but at prices which it is understood will compare favourably with those asked elsewhere.

Shellac.—Privately a fair trade has been done this week at full to again slightly higher prices, as will be seen from our stock list deliveries during last month were considerably in excess of arrivals, and shipments from *Calcutta* have been decidedly less than for the same period last year. At the public auctions on Tuesday the supplies were moderate, and met with good competition, and sold at an advance of 2s. to 3s. per cwt. A total of 778 cases offered, and 478 cases sold. *Second Orange*: Strong curly red free at 82s. to 83s., middling red curly at 81s., fair red Calcutta worked at 82s., dull red ditto at 79s. to 80s., more or less cakey and blocky, good bright, 82s. to 84s., fair bright, 80s. to 81s., and ordinary red flint block at 75s. to 77s. per cwt. For arrival the market closes firmer, with buyers of *Second Orange* at 81s. 6d., but no sellers below 82s. per cwt. *c.i.f.* terms.

Soda Compounds.—*Crystals* unchanged at 42s. 6d. per ton *ex*-ship. *Bicarbonate*, 98-99 per cent. £7 10s. per ton. *Caustic*, 70 per cent. white, £8 5s. per ton; 60 per cent., £7 5s. per ton. *Hyposulphite*, £6 5s. per ton.

Spices (Various).—*Nutmegs* are steady, but quiet. Of 52 cases *Penang* only 7 cases sold, 90's at 1s. 7d., 92's at 1s. 6d. *West Indian* sold at unchanged rates; middling to good shape and colour, 61's at 3s., 64's at 2s. 9d., 67's at 2s. 5d., 80's at 1s. 8d., 92's at 1s. 6d., and 108's at 1s. per lb. *Mace* is also quiet. *Penang* bought in at 1s. 5½d. per lb. *West Indian* sold at 1s. 2d. to 1s. 5d. per lb. *Capsicums*,

MONTHLY STATEMENT OF DRUGS, ETC., WAREHOUSED IN LONDON.

November 1, 1896.

		October.		Stocks, October 31.	
		Arrivals.	Deliveries.	1896.	1895.
Aloes (all kinds)	packages	434	429	6,612	8,019
Balsams ,,	,,	26	76	702	1,508
Bark, Cinchona	,,	1,063	2,881	23 047	28,470
Quinine Sulphate	ounces	46,496	77,776	1,444,784	2,069,888
Beeswax	packages	235	353	1,930	2,9[illegible]3
Camphor	,,	100	745	13,851	16,375
Cardamoms	,,	67	207	892	1,068
Cochineal	,,	449	160	2,008	1,409
Colombo Root	,,	1	1	113	1,041
Cubebs	,,	253	35	549	492
Dragon's Blood	,,	3	10	101	185
Galls	,,	636	1,300	9,211	6,283
Gum, Ammoniacum	,,	—	1	43	100
Arabic, all kinds	,,	1,014	2,129	14,223	11,993
Asafœtida	,,	—	39	447	745
Benjamin	,,	507	426	2,929	1,780
Galbanum	,,	—	—	1	2
Gamboge	,,	36	68	180	168
Guaiacum	,,	11	15	53	97
Kino	,,	—	—	28	14
Mastic	,,	2	2	9	13
Myrrh	,,	8	34	640	505
Olibanum	,,	—	447	3,350	2,890
Tragacanth	,,	426	615	3,898	3,122
Ipecacuanha	,,	84	66	469	727
Jalap	,,	—	44	330	268
Nux Vomica	,,	19	71	653	1,145
Oils, Castor	,,	91	287	823	1,441
Olive	,,	106	193	996	554
Aniseed	,,	6	15	28	157
Cassia	,,	20	20	20	31
Rhubarb	,,	167	122	537	1,073
Saltpetre	tons	177	1,135	3,463	2,043
Sarsaparilla	packages	91	91	306	406
Senna	,,	1,313	1,157	2,530	2,701
Shellac	,,	1,699	5,402	36,481	24,235
Terra Japonica, Gambier	tons	574	772	859	379
Cutch	,,	37	264	1,658	1,826
Turmeric	,,	19	100	1,000	1,282

The stocks of camphor, oils of cassia and aniseed, are incomplete, some warehouses not making returns.

64 bags. *Tellicherry*, good bright reddish off-stalk sold at 20s. 6d. per cwt. *Arrowroot* is firmer. Of 431 barrels *St. Vincent* 300 barrels sold; good medium, 1⅜d. to 1½d. per lb. *Natal* sold at 5¼d. per lb. *Pepper* is selling at steady prices, good fair *Singapore* at 2⅞d. per lb., whilst for arrival this grade is firmer. *White Pepper* very quiet and market inactive. *Pimento* also very slow of sale; middling, 2⅛d.; fair, 2¼d. per lb.

STAVESACRE SEEDS — Are firmer, and quoted 50s. to 55s. per cwt. as to holder.

NEWCASTLE REPORT.

NOVEMBER 3, 1896.

This market does not experience much change. Sulphur and refined alkalies alone are found to be scarce, and enhanced values in consequence. Prices are:—*Bleaching powder*: £6 10s. to £7 10s. *Caustic soda*: 70 per cent., £7 5s. to £7 10s. *Soda crystals*: 37s. 6d. to 45s. *Soda ash*: 52 per cent., £4 5s. *Alkali*: 52 per cent., £5 5s. *Sulphur*: £5 per ton on board.

MANCHESTER REPORT.

NOVEMBER 4, 1896.

A fair number of contracts continue to be made in heavy chemicals for home consumption, but the lack of demand for the States is causing disorganisation locally at Widnes and St. Helens, owing to the uncertainty which exists. *Caustic soda* is lower for export, but no change on home account. *Chlorate of soda* has never been so low, and consumers are covering forward in anticipation of a rise. For export the figure is 5d. per lb., and for home consumption 5⅛d. *Yellow prussiate* is a trifle firmer. Although low prices are named, the most diligent inquiry here does not obtain confirmation of them. Both best local and *Scotch* makes are firm at 6½d. to 6¾d. per lb., and firmly held. *Sulphate of ammonia* continues to recede at Leith and other ports, but locally makers are not anxious to press sales. *Acetate of lime* is unchanged at £4 5s. per ton, best *Welsh* at station, Manchester; *American*, £4 per ton, *c.i.f.* *Alum* is in fair request at about £5 per ton loose lump, on spot; 2s. 6d. extra tierces. *Oxalic acid* varies from 3¾d. to 4d. In drugs and drysalteries a little more business reported.

LIVERPOOL REPORT.

NOVEMBER 4, 1896.

The general tone of the market remains steady, with easier prices in canaryseed, beeswax, linseed and cotton-seed oils, and spirits of turpentine. Some sales of Teneriffe black grain cochineal have taken place, but it is now held for 1s. 3d. per lb. Linseed is firmly held by the few who possess stocks for higher rates. Some of the false kola nuts referred to in last week's *Pharmaceutical Journal* have passed through the Customs here, but so far have not been offered for sale publicly.

BEESWAX.—*Peruvian* has sold at £7 per cwt., and about 44 packages of *Gambia* at £6 12s. 6d.

BICARBONATE OF SODA—Slightly easie at £6 15s. per ton.

BORAX.—*Lump*, 20s. per cwt.; *powder*, 21s.

CANARY SEED—Is inanimate, with but small sales of *Turkish* at 30s. per 464 lbs.

CAUSTIC SODA.—70 per cent., £7 5s. to £7 10s. per ton; 60 per cent., £6 5s. to £6 10s., or a fall of 5s. per ton on last week's prices.

CHLORATE OF POTASH.—Offering at 4d. to 4¼d. per lb.

COCHINEAL—Is firmly held for 1s. 3d. per lb., *Teneriffe* black grain stocks being small.

COPPERAS.—*Lancashire*: 38s. per ton.

CREAM OF TARTAR—Is unchanged at the nominal quotation of 87s. 6d. per cwt. for finest white powdered cream.

GINGER.—At auction a lot of 150 bags of *Sierra Leone* made 19s. 6d. per cwt., and one of 20 tons *Sierra Leone* 21s. 6d.

HONEY.—*Chilian Pile I.* has been selling at 23s. per cwt.

LINSEED—Is steady but no business to report, sellers being scarce and holding off for an advance.

NITRATE OF SODA—Has taken a turn in sellers' favour, 7s. 10½d. to 8s. 3d. per cwt.

OILS (FIXED) AND SPIRITS.—*Castor oil* maintains its strong tone, and has advanced to 3½d. per lb. for "good seconds" *Calcutta*, 1st pressure *French* and *Madras* holders only offering in small amount. *Olive oil* is in improving demand at good prices. *Seville* selling at £29 per tun. *Linseed oil*: *Liverpool* pressed is selling freely at 17s. 9d. to 18s. 6d. per cwt. *Cotton-seed oil*: *Liverpool* refined has dropped 3d., and is now at 16s. 9d. to 17s. 3d. per cwt. *American*: 18s. per cwt. *Spirits of turpentine* is easier in price, and now brings 21s. 6d. to 21s. 9d. per cwt.

PEARL AND POTASHES still at 35s. and 21s. per cwt. respectively.

Advertisements in the Pharmaceutical Journal.

ALL ADVERTISEMENTS must be sent to the Office, 5, Serle Street, Lincoln's Inn, W.C., where replies to prepaid advertisements may be addressed, and will be redirected free of charge. Postal Orders should be made payable at Lincoln's Inn, W.C., to STREET BROS. Cheques should be crossed "London Joint Stock Bank."

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York	Sowray, Joseph.

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	Hudson, Thos. H.
	Thompson, C. J. S.
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(*Salford*)	Walton, J. Woodruff.
Dundee (*Lochee*)	Kerr, Charles.
(*Broughty Ferry*)	Park, William.
Glasgow (*Central and East*)	Russell, J. Anderson.
(*South*)	Moir, James.
	Boyd, Alexander.

THE CHEMISTS' CLUB (LONDON).

A very successful "smoking concert" was held at the Chemists' Club, 2, Farringdon Avenue, Ludgate Circus, E.C., on Thursday, October 29.

Mr. Horace Davenport occupied the chair, the duties of Vice-Chairman being efficiently performed by Mr. W. A. Goodall, Hon. Secretary. There was a large number of visitors in the room besides the members of the Club, who were present in strong force. Printed forms had been distributed about the room, inviting visitors to give in their names to the Secretary to be nominated for membership, and many of them responded to the invitation. A statement was also made to the effect that persons joining the Club during the remaining months of the present year would not be called upon for a second subscription until the end of December, 1897.

The programme was rather a lengthy one and comprised both good and varied talent. An overture "Shepherds' Dance" (Henry Eighth) by Mr. F. Peskett headed the list, the remainder consisting of songs, both humorous and otherwise, by Messrs. J. Murdoch, Knell, Walker, Munday, Cathie, Pettitt, Bennett, Henderson, Webb, Dearth, Robins, Read, Whiteman, and Dutton, a recitation "Vat you please" by Mr. Pennock, and some very good mimic sketches of Irving, Arthur Roberts, etc., by Mr. Watts.

The humorous songs of Mr. Walker anent "Chemists' Experiences and Examination Difficulties at 17, Bloomsbury Square," were highly appreciated. The interest in the various items comprising the programme was well sustained throughout, several of the artistes receiving hearty encores, to which they readily responded.

During an interval the announcement was made that Mr. Boutall, the donor of the billiard prizes, was present, and at the mention of his name, the members and visitors alike expressed their feelings of pleasure by loud and hearty cheering.

In thanking all for the cordial reception given to him, Mr. Boutall said he wished every success to the Chemists' Club.

A toast, "The Health of the Chairman," proposed by Mr. N. Spyer, was enthusiastically received. Mr. Davenport, after thanking the proposer of the toast and all for their good wishes, said it was not his intention to make a speech, because he thought speeches were out of place at a gathering of that character.

A very pleasant and enjoyable evening was concluded by the singing of "God Save the Queen" and "Auld Lang Syne."

LIVERPOOL PHARMACEUTICAL STUDENTS' SOCIETY.

A very successful smoking concert was held by this Society on Thursday evening, October 29, to inaugurate the winter session. The place chosen was the Kardomah Café, Church Street—a favourite with the "Students"—where, under the presidency of Mr. John Jones, of Messrs. W. and J. Fergusson's, an audience of about seventy members and their friends assembled, including many of the wholesale trade and members of the Liverpool Chemists' Association. The programme was noteworthy from the number of instrumental solos and duets it contained, amongst which the cornet solos of Mr. J. C. Wright, and the mandoline and piano duets by Messrs. T. D. Tinsley and E. Hughes, may be singled out from their special excellence. The vocalists acquitted themselves well without exception, contributing song after song in quick succession, and with the assistance of the genial chairman making the concert go off well and smoothly in every respect. The accompanists, Messrs. Oxford and Hughes, gave every satisfaction, and together with the vocalists, Messrs. Kilpatrick, Beattie, Billington, Shacklady, Knowles, Mitchell, and Tinsley received a hearty vote of thanks for their skill and assistance. The irrepressible youths in the gallery were allowed a chorus at intervals to work off their animal spirits, and appeared in a high state of self-satisfaction in consequence. At the close the usual votes of thanks were accorded on the motion of Mr. T. J. Wokes, seconded by Mr. C. W. Cooke.

MIDLAND PHARMACEUTICAL ASSOCIATION.

The President (Mr. T. J. Gibson) and Council of the Midland Pharmaceutical Association held a reception and conversazione at the Grand Hotel, Birmingham, on Tuesday evening. There was a numerous attendance of members, ladies, and friends, among those present being Messrs. R. Darton Gibbs, T. Barclay, C. Thompson, H. J. Woodward (Municipal Technical School), F. H. Alcock, T. W. Chapman,

Brown, F. H. Prosser, F. Barlow, Poole, Bindloss, Clarke, Richards, Elliott, J. C. McKenzie, Dr. S. Haynes, etc.

Before dancing and the musical part of the programme was commenced the President delivered a brief address, in the course of which he said that it was not by his wish that he was filling the position the Council had unanimously elected him to. He had accepted it because he was deeply interested in the Association. He appealed to all chemists in the Midland district who were not members to join the Association and assist their endeavours to advance the calling of pharmacy. The Council would be pleased to see better attendances at the various meetings, and would gladly consider any suggestions members chose to offer. It would be easy to make an advance if all the chemists throughout the country would rally round their local associations. The latter could then be more closely federated, and in critical times the whole voice of the trade could be raised and make itself felt at the right moment. The present was a critical time. When they looked around they found companies trading—according to their own advertisements—not for their own benefit, but *pro bono publico*.

Proprietary medicines were given away for less than their stated value, and all other goods sold at the same rates, and yet at the end of their financial year dividends were declared to the benevolent shareholders. As he was not in their secrets, he was unable to tell them how it was done. The public compared prices without thinking seriously, and unfairly criticised the chemist. Another grievance of the retail trade was due to advertisers in medical journals stating the wholesale price of an article, and some few medical men forgot that fact when telling their patients to get a certain article at such a price from their chemists. It was difficult to convince the patient that the doctor had made a mistake as to the price. Then the Government and other public bodies seemed to him to put a very low estimate on the value of the duties that a dispenser had to perform. They saw in the advertisements, as a rule, that very low salaries were offered, and that was a point those members of the craft who were connected with public bodies might pay some attention to when vacancies occurred. In regard to the appeal to the makers of proprietary articles, their Association had done valuable work.

They had heard a great deal lately about education, and the School of Pharmacy had been re-organised. At the present time the preparation for the Minor examination occupied a whole session, and another was taken for the Major. That, he thought, was a step in the right direction, as he hoped it would lead to a compulsory curriculum, which would be found an excellent step, and one which would soon be appreciated by every student, and especially by those who received their first training in country districts. Whilst speaking of examinations, he asked was it not time they had an alteration in the Preliminary? It was hardly fit to be classed with what was required by a Board School standard, and many of their public schools would not allow boys to give up their ordinary work to prepare for it, as the masters considered that any third or even second-form boy ought to be able to pass that examination without preparation. He said let the standard be raised to that required by the Medical Council, so that the examination might become more generally useful, and their apprentices be better grounded at school than was the case at the present time.

The President also spoke in favour of a distinctive title being applied to the craft, and believed "pharmacist" would be a fitting one, and one which the general public would easily recognise. It was useless to expect that any Government would grant them protection, unless they could show that what they asked was for the public good, and therefore they must make themselves so necessary to the public that the latter could not do without them. To accomplish what they desired it would be necessary for them to unite, and not leave the work to a few. They wanted an improved Preliminary examination, a curriculum, and a distinctive title. Were those worth working for? If so, they must have meetings all over the country and discuss the subjects thoroughly, and when a decision was arrived at, the Birmingham Council would, he was sure, do their portion of the work, and an amended Pharmacy Act, which one and all must loyally support, should be the result.

Mr. T. Barclay moved a vote of thanks to the President, and congratulated him on the representative character of the gathering. It showed that they had some backbone left in them yet, and courage for the future. He was pleased to see several old friends present who had travelled from distant parts of the Midlands, and also cordially welcomed Mr. Woodward, who had informed him that there were already thirty pharmaceutical students attending the Technical School.

Mr. Gibbs seconded the motion, and said that the attendance was a pretty fair indication that in electing Mr. Gibson the Council had made a proper choice. He was pleased to note in the address that the President was carefully following on the work that had been done in previous years in connection with the Association.

The motion was carried, and Mr. Gibson briefly replied. The remainder of the evening was pleasantly spent.

BRADFORD AND DISTRICT CHEMISTS' ASSOCIATION.

The above Association commenced the winter session with a social meeting, which was held on Tuesday night at Leuchter's Rooms, Darley Street. The rooms were suitably decorated for the occasion. A capital programme had been arranged by Messrs. Pickard, Silson, and Taylor, which was duly appreciated by a large and interested audience. It consisted of song (comic and sentimental), pianoforte and violin solos, and was varied with speeches during the interval. Mr. Geo. Rimmington (one of the vice-presidents) made a capital chairman in the unavoidable absence of the President of the Association, Mr. Ed. MacRay. The following gentlemen contributed towards the evening's entertainment: Messrs. S. Crabtree (accompanist), W. Brinson, A. Bray, R. Dunn, J. Moulson, J. A. Mitchell, S. N. Pickard, Geo. Rimmington, R. W. Silson, R. Silson (jun.), F. K. Taylor, and A. H. Waddington.

The Chairman (Mr. Rimmington) proposed that the best thanks of the meeting be given to those gentlemen who had taken part in the evening's entertainment, coupled with the visitors, which was carried with acclamation. Mr. Pickard replied on behalf of the entertainers, and Messrs. W. Brinson (E. Sons and Co.), and A. Bray responded on behalf of the visitors.

On the motion of Mr. Pickard, Secretary, by Mr. Silson, and supported by Mr. Dunn, a hearty vote of thanks was accorded Mr. Rimmington for presiding, which was carried with musical honours. Mr. Rimmington suitably replied, and thus ended a very pleasant and enjoyable evening.

NEWS IN BRIEF.

PHARMACY DINNER AT EDINBURGH.—We learn that there is to be a dinner in the Pharmaceutical Society's Hall, at 36 York Place, Edinburgh, on the evening of November 26, the date of the next meeting of the Executive of the North British Branch. The dinner is to be at 6.30 p.m., and the tickets are 10s. 6d. inclusive. Presumably they may be obtained of the Assistant Secretary in Scotland—Mr. J. Rutherford Hill.

PHARMACEUTICAL FOOTBALL CLUB.—A match was played on Saturday last at Shepherd's Bush against the Crownfield Football Club, which resulted in a win for the latter, 3 to 1. The Pharmaceuticals were outmatched, but the game was well contested, Cardwell at full back and Jones on the outside left being conspicuous for the services they rendered to the home team.

Team:—Lean, goal; Cardwell and Webster, backs; Smith, Happold, and Nelson, half backs; Day, Matthews, Fothergill (centre), Jackson, and Jones, forwards.

ROYAL INSTITUTION.—A general monthly meeting of the members of the Royal Institution was held on the 2nd inst., Sir James Crichton-Browne, M.D., LL.D., F.R.S., Treasurer and Vice-President, presiding. The following were elected members:—Mr. George Cawston, Mr. J. Broughton Dugdale, J.P., D.L., Mr. Henry Harben, J.P., and Mr. John H. Usmar. The special thanks of the members were returned to the proprietors of the *Times*, Dr. Ludwig Mond, F.R.S., Professor Dewar, and Sir Andrew Noble for their donations to the fund for the promotion of Experimental Research at Low Temperatures.

EDINBURGH PHARMACY ATHLETIC CLUB.—The last golfing competition for the season, which has been most successful, was held at the Braids on Friday and Saturday last, October 30 and 31, when the "Dick Handicap Challenge Medal" was played for. Mr. John Greig was the winner, handing in the fine score of 83 scratch, made up as follows:—4 4 4 6 7 6 4 5 5=45 out, 5 4 5 5 5 3 4 3 4=38 in. Mr. Greig having three wins to his credit will be presented with the gold charm awarded to the competitor holding the medal most times during the year.

Winslow's Soothing Syrup, according to the evidence of Dr. Murphy at an inquest held at the Nelson Town Hall on Tuesday, October 27, contains nearly a grain of morphine to the ounce. A ten-weeks-old child had died from the effects of half a teaspoonful, which the doctor said contained one-thirtieth of a grain of morphine. Repeated examinations of the same preparation by the Pharmaceutical Society's analyst have revealed the presence of no more than about a thirtieth of a grain of morphine in a whole bottle of the syrup. Dr. Murphy's evidence, therefore, seems to indicate the probability that the strength of the preparation is not always uniform, a state of affairs much to be deplored if correct. As reported in the *Burnley Gazette*, the Coroner said that the child had undoubtedly been poisoned by an overdose of the syrup, and the jury returned a verdict accordingly.

Failure of a South Yorkshire Chemist.—At the offices of the Official Receiver at Sheffield on Saturday week a meeting was held of the creditors of John Edward Goodall, chemist, of 3, Britain Street, and the Imperial Pharmacy, Wath Road, Mexborough. It appeared from the statement of the Official Receiver that the debtor, who filed his petition on September 30, owes to unsecured creditors £147 13*s.* 3*d.*, and to preferential creditors £11 13*s.* His stock-in-trade was estimated to produce £25, and the deficiency was £122 5*s.* 3*d.* Goodall was in business at Hanley until 1892, when he executed a deed of assignment with debts amounting to £200, and the creditors received 1*s.* 3*d.* in the £. This arrangement was not agreed to by all the creditors. The debtor afterwards managed a business at Mexborough, and in February last commenced trading on his own account. He had no capital, and was really insolvent then in consequence of his previous liabilities not having been discharged. The matter was left in the hands of the Official Receiver.

Mr. Albert Searl, F.C.S., who recently resigned his position as manager of the Phœnix Mills, Dartford, has been presented by Mr. Henry S. Wellcome with a handsome gold watch, with a suitable inscription in recognition of his long and faithful services to the firm of Burroughs, Wellcome, and Co., and as a mark of high personal esteem.

Mr. F. Bascombe, pharmaceutical chemist, Hon. Treasurer to the Lambeth Carlton Bowling Club, received a second prize for the second handicap, on the occasion of the annual dinner and distribution of prizes on October 29. Mr. R. Bremridge and Mr. G. S. Taylor, pharmaceutical chemist, were amongst those present at the dinner.

Mr. S. Fripp, the manager of Messrs. Rocke, Tompsitt and Co., Melbourne, who has been on a visit to this country, left for Melbourne on October 23 by the s.s. "Rome." The management of the London house will in future be under the control of Mr. W. B. Henley, who alone has authority to sign for the firm.

"It" is the somewhat unhappy term proposed by Captain Abney, in his recent presidential address before the Royal Photographic Society, to express exposure as comprising the intensity of the light and time, but he also threw out the suggestion that the term "Talbot" might be adopted. As in the electrical world we have a "Watt," an "Ampere," an "Ohm," all taken from some of the earlier experimenters, why should not photographers talk of a Talbot, a Daguerre, a Niepce, a Schulze, etc.?

British Export Trade.—According to the Board of Trade Returns for the United Kingdom for September, 1896, the total export value of British and Irish chemicals, and chemical and medicinal preparations for the month ending September 30, 1896, decreased £10,428, compared with the same period in 1895. The returns for the nine months ending Sept. 30, 1896, show an increase of £88,614, contrasted with the corresponding period of 1895. Omitting chemicals, however, the value of medicines, comprising drugs and medicinal preparations, exported during the month of September as compared with previous years has steadily increased. In 1894, £75,562; 1895, £88,827; 1896, £95,338. For the nine months ending September 30, the returns are as follow:—1894, £720,343; 1895, £752,847; 1896, £826,455.

Mr. A. J. Smith, chemist and druggist, of Taunton, has been elected a representative on the Taunton Town Council without a contest.

Mr. John McKerlie, of Dumfries, has purchased the business of Mr. David McMay, Thornhill.

Mr. George Scott Carmichael, a former Prizeman of the Edinburgh Chemists' Assistants' and Apprentices' Association, has taken the Vans Dunlop Scholarship in botany and zoology in the University of Edinburgh. It is worth £100 for three years.

Mr. Thos. Mackenzie, of the Glasgow and West of Scotland Central School of Pharmacy, has completely recovered from his recent illness, and has resumed his duties.

Mr. John J. Perkins, chemist and druggist, Lichfield, has been for the fourth time elected a Councillor for that city.

Mr. John Harrison, of Sunderland, Vice-President of the Pharmaceutical Society, has been re-elected a Councillor for the borough without opposition.

'The Mystery and Romance of Alchemy and Pharmacy' is the title of a book by Mr. C. J. S. Thompson, which is to be published by subscription at the price of 4*s.*, including postage. Readers of the Journal who were interested in Mr. Thompson's articles when they appeared in our pages will doubtless be glad to possess this volume, in which the articles are reprinted with the addition of much extra matter. The work will not be proceeded with unless at least 250 subscriptions are received, and orders should therefore be sent at once to the Scientific Press, Limited, Southampton Street, Strand, W.C.

Mr. J. Edwin Bonn, chemist and druggist, Brading, Isle of Wight, is an enthusiastic musician, and the *British Musician* for October contains an interesting account of his stock of rare violins and accessories. He is the inventor of the "Premier" violin string, which enjoys a considerable reputation.

Messrs. T. and H. Smith and Co., wholesale druggists, Edinburgh, were granted a grocer's wine and spirit licence at the usual half-yearly licensing Confirmation Court of the city of Edinburgh, which was held on the 2nd inst. This enables the firm to supply chemists with any quantity, small or large, of rectified spirit as well as the various medicated wines required by the trade.

Football Match.—On Saturday, October 31, the Metropolitan College of Pharmacy gained a victory over the South London School of Pharmacy by four goals to one. The match was played on Tooting Bec Common, and was witnessed by a large number of students from both Colleges.

Cassell and Co., Limited, are inaugurating a new era in the history of *The Quiver*. Each part, commencing with the November number, is to be enlarged to the extent of sixteen pages, and new paper and type are being used, having been specially selected to obtain the best possible results, whilst a new design has been prepared for the wrapper.

Mr. F. Bird, chemist and druggist, of Coventry, was on Monday last elected a City Councillor for Earl Street Ward at the head of the poll. At this election Mr. Bird, who is also Chairman of the Local School Board, brought voters to the poll in motor cars, being probably the first candidate in England to do so.

Mr. J. G. Netting, chemist and druggist, Plymouth, was on November 2 elected a a member of the Plymouth County Council, at the head of the poll, for St. Peter's Ward.

Nitragin is a new germ preparation made by Messrs. Meister Lucius and Brüning, of Hoechst-on-Main, and intended to promote the fertility of soils for leguminous crops. It is put up in bottles, one of which contains enough for the treatment of 2½ roods of land. The preparation is in the form of a gelatin cultivation, which readily liquefies at the temperature of the human body, beyond which it must not be heated. Neither must the medium be exposed to direct sunlight, which would kill the bacteria. The liquefied medium is diluted with sufficient clean water to moisten the seeds, or else mixed with the earth to be inoculated. Thus the method of applying the nitragin is extremely simple. Eight varieties of the preparation are already specified for application to different species of Leguminosæ.

EXCHANGE—OFFERS AND WANTS.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Books, etc.

A book of 130 Well-tried Recipes for Chemists and Druggists, comprising well-selected formulæ for general, remedial, veterinary, toilet, and everyday preparations. Post free, 1s. 6d.—Tully, Chemist, Hastings.

What offers ?—Twenty years' 'Pharmaceutical Journal,' unbound.—Clark, Chemist, West Street, Sheffield.

OFFERED—(*continued*).

What offers ?—Attfield's 'Chemistry,' 11th edition; Roscoe's 'Chemistry'; Watts' 'Organic'; Kemshead's 'Inorganic'; Edmond's 'Botany'; 'British Pharmacopœia'; Beale's 'Slight Ailments'; all in good condition.—Roper, 2, South Street, Scarborough.

Miscellaneous.

Magic Lanterns, second-hand; Wrench's telescopic triple and biunial; Ladd's oxyhydrogen microscope; grand biunial patent pamphengos oil, lantern, gives 14-ft. picture; slides and effects; bargains; illustrated list post free, 2d.—Hughes-Brewster House, 82, Mortimer Road, Kingsland, N.

Shop Fittings, etc.

Set mahogany drawers, 16 ft. long, 97 drawers, spaces for medicine bottles; mahogany desk with glass-case front.—W. Heffer, Fitzroy Street, Cambridge.

PROFESSOR HENRY DIXON, B.A., has so far recovered from the results of his late accident as to be able to resume his lectures in botany in the Irish Society's School.

MR. J. M. WHITAKER, LL.B., son of Dr. Whitaker, one of the founders of the Irish Pharmaceutical Society, and now Chief Medical Officer for Belfast City, is about to be called to the Irish Bar. Mr. Whitaker passed with honours at the legal examinations held on the 19th and 20th ult., and won a three years' scholarship of £50 per annum.

DR. E. MCDOWEL COSGRAVE, Examiner to the Pharmaceutical Society of Ireland, has been appointed Examiner in Biology to the Royal College of Physicians of Ireland.

SIR CHARLES CAMERON, Dublin City, chemist, has received the degree of M.D., *honoris causa*, of the Royal University of Ireland.

A NEW PHARMACY has been opened at Maghera, County Londonderry, by Mr. John Walsh, L.P.S.I.

ROYAL COLLEGE OF SURGEONS, IRELAND.—At the re-opening of the Medical Schools in connection with this College, two pharmacists received first prizes: Mr. C. B. Vance, L.P.S.I., obtaining a first prize (cheque) and medal in chemistry, and Mr. J. C. F. Meyler, L.P.S.I., a first prize (cheque) and medal in materia medica. Both gentlemen have medical halls in Dublin.

MR. THOMAS HANBURY, of La Mortola, states, in a communication to the *Times* on the weather in the Riviera, that during the stormy month of October the rainfall has been as much as 15·5 inches, or nearly two-thirds of the average for the whole year.

ALKALI is extensively used by the wood pulp mills and glass works at Gothenburg, Sweden, and, according to Consul Duff, is exclusively imported from Great Britain. Chloride of lime, which until lately has exclusively been imported from Great Britain, is now also being imported from Germany. Sulphur and flowers of sulphur, extensively used in the manufacture of chemical wood-pulp, are chiefly supplied by English firms, particularly the refined article.

TELEPHOTOGRAPHIC LENSES have, for some considerable time now, been placed upon the market by various firms, but Zeiss, of Jena, has considerably improved his pattern and now makes the front lens of a single meniscus form with four glasses with a working aperture of F/3.

MORE *X*-RAYS OR SOMETHING!—Ever since the discovery of the *x*-rays there have been innumerable statements as to the action of certain metals and substances on the sensitive plate, and one of the most curious observations is that made by Colson, that freshly polished zinc gives off emanations or vapour of some kind, which have the property of affecting the haloid salts of silver like light, and that the vapour will penetrate through wood, paper, and other substances.

MR. A. P. NOSWORTHY has opened a new business in Preston Street, Brighton, and has disposed of that at Grove Hill Road, Tunbridge Wells.

NEW BOOKS AND NEW EDITIONS.

LES ALCALOÏDES DES QUINQUINAS. Par E. LEGER. Paris: Société d'Editions Scientifiques, 4, Rue Antoine Dubois, 4. 1896.

APPLIED BACTERIOLOGY: An Introductory Handbook for the Use of Students, Medical Officers of Health, Analysts, and Others. By T. H. PEARMAIN and C. G. MOOR, M.A. (Cantab.) 12s. 6d. net. London: Ballière, Tindall and Cox. 1896.

THE ELEMENTS OF ELECTRO-CHEMISTRY. By MAX LE BLANC, Professor of Chemistry in the University of Leipzig. Translated by W. R. Whitney. 6s. London: Macmillan and Co., Ltd. 1896.

THE PRACTICAL METHODS OF ORGANIC CHEMISTRY. By LUDWIG GATTERMANN, Ph.D. Translated by W. B. Shober, Ph.D. 8s. 6d. London: Macmillan and Co, Ltd. 1896.

A TEXT-BOOK OF BACTERIOLOGY. By GEORGE M. STERNBERG, M.D. LL.D. Illustrated by heliotype and chromo-lithographic plates, and two hundred engravings. 24s. London: J. and A. Churchill, 7, Great Malborough Street. 1896.

A TEXT-BOOK OF BACTERIOLOGY, including the Etiology and Prevention of Infective Diseases. By EDGAR M. CROOKSHANK, M.B. Fourth edition, revised and enlarged. 21s. net. H. K. Lewis.

PRACTICAL WORK IN PHYSICS FOR USE IN SCHOOLS AND COLLEGES. By W. G. WOOLLCOMBE, M.A. (Oxon), B.Sc. (Lond.) Part III., Light and Sound. Price 3s. London: Henr Frowde.

A NEW COURSE OF EXPERIMENTAL CHEMISTRY. By JOHN CASTELL-EVANS, F.I.C. Revised Edition. Thomas Murby.

EXPOSURES OF QUACKERY. By the Editor of *Health News*. Vol. II. 1s. The Savoy Press.

DIARY OF THE WEEK.

Secretaries of Societies are requested to send notices of forthcoming meetings not later than Wednesday in the previous week.

SATURDAY, NOVEMBER 7.

PHARMACEUTICAL FOOTBALL CLUB *v.* Bloomsbury Reserves, at Crouch End. Train from King's Cross (G.N.R. suburban), 2.27.

MONDAY, NOVEMBER 9.

IMPERIAL INSTITUTE, at 8.30 p.m.
"Illustrations of Some of the Work of the Scientific and Technical Research Department of the Imperial Institute," by W. R. Dunstan.

TUESDAY, NOVEMBER 10.

MIDLAND PHARMACEUTICAL ASSOCIATION, at 8.30 p.m. Paper by J. Barclay.

ROYAL GEOGRAPHICAL SOCIETY, at 8.30 p.m.
President's Address.
"The Jackson-Harmsworth Expedition and the Story of the Last Year's Work," by Arthur Montefiore Brice.

ROYAL PHOTOGRAPHIC SOCIETY, at 8 p.m.
"A New Form of Apparatus for Measuring the Light Reflected from Prints," by Chapman Jones.

ROYAL COLONIAL INSTITUTE, at 8 p.m.
"Inter-British Trade." By John Lowles.

WEDNESDAY, NOVEMBER 11.

BRIGHTON JUNIOR ASSOCIATION OF PHARMACY, at 9 p.m.
"The Röntgen X-Rays," by J. Williamson.

BRITISH PHARMACEUTICAL CONFERENCE, at 4.30 p.m. Executive Committee Meeting.

MANCHESTER PHARMACEUTICAL ASSOCIATION, at 7.30 p.m.
"To what Extent should the Pharmacopœia be an Authority on the Purity and Analysis of Drugs?" by A. W. Duncan.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION, at 9 p.m.
"The Pharmacopœia upon Crystallisation," by H. S. Shorthouse.

PHARMACEUTICAL SOCIETY.
Meeting of Library, Museum, School, and House Committee.

THURSDAY, NOVEMBER 12.

CHEMISTS' ASSISTANTS' ASSOCIATION, at 8.30 p.m.
Annual Conversazione, Portman Rooms.

LIVERPOOL PHARMACEUTICAL STUDENTS' SOCIETY, at 8.30 p.m.
"Lantern Slide Making" (Illustrated), by R. H Mitchell.

FRIDAY, NOVEMBER 13.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION, at 9.15 p.m.
Inaugural Address by the President, James McBain.

LATE ADVERTISEMENT.

Assistant Wanted.

WANTED by a firm of Surgeons, a qualified DISPENSER and BOOKKEEPER. Out-door. Apply after 6 p.m. 143, Hammersmith Rd., West Kensington, W.

Market Report

And Prices Current of Drugs, Chemicals, Oils, and Seeds.

The quotations here given are in all cases the lowest net cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these cond tions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

[Specially Compiled for the 'Pharmaceutical Journal.']

LONDON REPORT.

LONDON, NOVEMBER 12, 1896.

The hoped-for increased activity in business has hardly been experienced this week, although the advance in several articles which are exported in quantity to America helps to bear out the expectations of a better trade with the United States proving the forerunner of a general improvement in the drug and chemical trade. The chief changes of the week have been a phenomenal rise in value of cardamoms, and a moderate reduction in price of morphia and of codeia, which reductions may, after all, looking at the actual position of opium, prove only quite temporary. Quinine is quiet and without change, but a fair amount of business has been done from first hand, people coming to the conclusion that it is better to do so and enjoy 60 days' protection against fall in value, than for sake of a trifling saving of ¼d. per oz. to run risk as to quality and weight by buying from second hand. Shellac is again dearer. Rhubarb and senna firmer. Menthol slightly easier on spot. At to-day's drug sales allusion was made to decease of Mr. Blum, late senior partner in the highly respected firm of Messrs. Aug. Faber and Co. The pioneers of the Mincing Lane drug trade are thus dropping off one by one. The following are the prices ruling for the various articles of interest:—

ACID CARBOLIC.—Market is distinctly dearer, and higher rates are confidently anticipated. One maker is completely sold out, and the largest maker, whose brand stands practically at the top of the list, requires 7d. for 35-36° acid in 2½-cwt. drums and own casks. Other packing and quality in proportion.

ALOES.—*Curaçoa*: Present very low prices if these should attract attention, and the more so as shippers state that more cannot be shipped until a decided rise in value takes place, cost of boxes, labour, freight, etc., being practically greater than present selling prices. Market for *Cape* is somewhat easier, fair dark hard fetched 20s. to 21s., while good hard bright were held for 22s. 6d.; fine livery *Curacao* sold at 30s.; and fair livery *gourds*, part dark, at 20s., fine ditto realising 34s., while *gourds* of low to very mixed quality sold at 10s. to 14s. per cwt.

AMMONIA COMPOUNDS.—*Sulphate* is again dearer with a very strong market; *Gray*, 24 per cent., London, £7 15s. to £7 17s. 6d.; Hull, £7 12s. 6d. to £7 15s.; Beckton, December, £8, and April-June, £8 2s. 6d. to £8 5s.; Beckton terms, prompt delivery, £7 15s. to £7 17s. 6d. per ton. *Carbonate*: Unchanged at 3d. to 3¼d. per lb. as to package. *Sal ammoniac*: Steady at 37s. per cwt. for firsts, and 35s. for seconds, with *crushed*, 2s., and *powdered*, 4s. per cwt. extra.

ARGOL.—8 bags *Cape* sold at 60s. per cwt.

BALSAMS.—Two casks of fair *Canada* were bought in at 1s. *Copaiba*: fair quality taken out at 2s. 1d. *Tolu* held for 3s. 3d. per lb.

BALSAM CANADA.—Unchanged at 1s. per lb. in casks, and 1s. 2d. in tins and cases.

BALSAM COPAIBA—Is very firm at 2s. to 2s. 2d. per lb., as to quantity.

BALSAM TOLU.—There has been a sudden break in prices in New York due to unexpected arrivals. Price here is also lower at 3s. 1d. per lb., and a further drop is not unlikely.

BLEACHING POWDER.—Firm at £7 10s. per ton on the spot.

CASCARILLA BARK.—65 packages sold at 25s. per cwt. for fair medium to small bright, to 39s. for good bold.

CASTOR OIL.—Fair *seconds Calcutta* were held for 3½d. per lb.

CALABAR BEANS—Have been in rather better demand, the spot quotation being 3d. per lb.

CARDAMOMS.—Very few were offered, and the market is very much dearer. Three cases fair bold brownish, splitting, sold prior to sale at 5s. per lb; rather mixed realised 4s., and 1 case small pale seed sold at 3s. 10d. per lb.

CINCHONA BARK.—The sales on Tuesday went off quietly on the parity of the last Dutch auction, the value of the unit being barely a ½d. *African*: 334 bales offered, and 192 sold. Fair thin quill, 3d.; do. stout, 2½d. to 2¾d.; broken quill and stem, 2¼. per lb. *Calisaya*: 14 bales offered and sold. Fair quill, 3⅜d.; do. damaged, 2d. to 2⅞d. per lb. *Ceylon*: 353 packages offered, and 256 sold. Crown, original stem, 1¾d.; do. branch, ⅞d. to 1¼d.; do. chips, 1¼d. to 1¾d.; red original shavings, ⅞d.; red renewed, ⅝d. to 1¼d.; red, good stout bold quill, 2d. to 4⅛d.; root, ½d. and ⅞d. per lb. Ledgeriana original shavings, 2d. per lb. *East Indian*: 328 packages offered, and 226 sold: Crown original stem and chips, 1¼d. to 2⅛d; do. fair quill, 2d. to 2½d.; crown renewed, 1½d. to 2¾d.; red root, 1¾d. to 2⅛d.; red renewed, 1¼d. to 1¾d. per lb. *Java*: 340 bales offered, and 132 sold: Ledgeriana branch, 2⅛d.; Ledgeriana original stem, 1¾d. to 2¼d. per lb.; 101 bales *Columbian* bought in. Sales next year will take place on the following dates:—January 12, February 16, March 16, April 13, May 11, June 22, July 20, August 17, September 14, October 12, November 16, December 14.

CIVET.—Quality offering left much to be desired. The parcels were chiefly bought in at 20s., but less would probably be accepted.

CLOVES—Remain at about previous rates. *Zanzibar* fetched 2⅛d. to 2⅜d. in sale. For forward delivery the price is rather better, about 2¼d. to 2⅜d. *Penang* dull, being bought in at 7½d. to 8d.

CODEIA.—Price was reduced at same time to 11s. 6d. per oz. for quantity.

COD LIVER OIL.—In sale good fair non-congealing *Norwegian* was held for 175s. to 180s. per barrel. The market generally is firm, but somewhat quiet.

CUBEBS.—Fair middling quality was held for 30s., while 30 bags sold cheaply at 25s. per cwt.

DRAGON'S BLOOD.—One case dull lump, rather damp, bought in at 85s.; 2 cases *dust* sold at 38s.; while 1 case very bright saucers realised £10 per cwt.

ERGOT OF RYE.—One bag small from *West Coast of Africa* was taken out at 5d. per lb., it being understood that a bid of 4d. was to be submitted. Thirty bags fairly bold, but wormy, *Spanish* were taken out at 5d., a bid of 3¼d. being refused. It is probable, however, that something like 4d. would be accepted.

GINGER.—220 bags rough *Cochin* sold at 15s. for small shrivelled, up to 31s. for fair medium and small. Limed *Japan* sold at 16s.

GLYCERIN.—Market quiet, and unchanged. Makers are busy delivering

against old contracts at cheaper prices while but few sales are being made at prices which they now ask.

GUMS.—*Acacia*: Pale *grain* was held for £6 15s., *glassy* picked for £7 5s., and bold *grain* for £6 10s., fair pale sorts for 85s. Eight bales hard red *Aden* sold at 55s. to 57s. 6d. per cwt. *Elemi*: Fair pale sold at 21s. *Kino*: One case good genuine held for 10s. per lb. *Benzoin*: The market is weaker; ordinary *Sumatra* seconds, dark ends, and sides bought in at 95s., good thirds fetched 75s., 4 cases fair medium *Siam* sold at £7 2s. 6d. to £7 5s., fair *Palembang* held for 25s. per cwt.

GUM (AMMONIAC).—One box very fine clean small to bold tear sold at 65s. per cwt.

GUM (ASAFŒTIDA).—The available stocks are now nearly all concentrated, and high prices are asked. A small business has been done this week at full rates, and bids slightly below asking prices have been refused.

GUM (MYRRH).—Good medium sold at 55s. good pale picked held for 90s., fair clean siftings for 40s., and pickings for 35s. *Olibanum* sold at 21s. per cwt., darkish Aden picked sold at 71s., *Gamboge*: Fair bright pipe sold at £8 15s. to £8 17s. 6d.; softish ditto at £7 5s. per cwt.

GUM (TRAGACANTH).—The demand for the better grades is checked in consequence of the firmness of holders, but more business is doing in the medium and lower grades at from 35s. to £11 per cwt.

HONEY.—30 cases fair brown liquid *Jamaica* sold at 28s. to 30s. per cwt.

IPECACUANHA.—Exceedingly dull, but without any very definite alteration in price. Very little changed hands in sale. The reported arrival of 158 bales had a distinctly depressing influence on the market, which was only removed when it transpired that these 158 bales contained of rubber, and not of ipecacuanha.

KAMALA.—Three cases partly good bright were bought in at 5d. per lb.

KOLA NUTS.—Two lots of the bold heavy *St. Domingo* nuts were up in sale, but found no buyers. Various small lots of *African* were partly sold and partly bought in at 4d to 5d. per lb. for inferior quality.

KOUSSO —The single bale which was offered in previous sale has since changed hands at 1s. per lb.

LEAVES. — *Buchu*: 17 bales yellowish green rounds bought in at 3d. *Coca*: 3 bales brown *Huanaco* were held for 7d. per lb. *Patchouli*: Ordinary dark broken held for 6d. per lb.

LIME JUICE.—15 puncheons sold at 10d. per gallon.

MENTHOL —Weaker on spot, good brands being obtainable at 8s. or even somewhat less, while price for *Kobayashi* for November to December shipment is 7s. per b. *c.i.f.*

MORPHIA.—Makers reduced price this week to 5s. per oz. for powdered salts for quantity.

MUSK.—1 tin pile 3 thin skin, blue, very damp, and rather doubtful, sold at 40s. per oz.

OILS (ESSENTIAL). — In sale *dementholised Japanese peppermint oil* was held for 3s. 6d. per lb. 3 cases of *cinnamon* sold at 6d. per oz. *Lime oil*: 4 cases held for 3s. 6d. per lb. 9 pots of *ginger grass oil*, or "whatever it may be" were taken out, there being no bid. *Eucalyptus oil*: Three cases fair ordinary quality sold without reserve at 1s. 3d., better quality being held for 1s. 9d. per lb. *Ylang-Ylang*: Two cases from *Cananga odorata* were held for 4s., no bid being made. *Lemon* very quiet, 3s. 7d. per lb. for prime old, and 2s. 10d. for second quality, with 1d. per lb. less for new crop shipments in December. *Bergamot*: 6s. 6d. per lb. for finest old crop, with 3d. per lb. less for new crop. *Sweet orange*: New crop is quoted 4s. 9d. per lb., whilst *Bitter orange* is held for 7s. 9d. per lb. *H.G.H. peppermint* on the spot is held for 7s. 4½d. to 7s. 6d. per lb., whilst for arrival 7s. per lb., *c.i.f.*, is the quotation. *Japan Peppermint*: 40 per cent., for shipment November-December steamer, is quoted 4s. 6d., per lb., *c.i.f.*; on the spot, 5s. 3d. per lb. *Dementholised*: 3s. 5d. per lb., *c.i.f.*, and 3s. 10d. to 4s. per lb. on the spot. *Cassia*: 70 to 75 per cent. is quoted 8s. 3d. to 8s. 6d. per lb. on the spot. New season's oils as a rule contain very little aldehyde. *Fennel* is dearer at 3s. 9d. per lb. In sale

OILS (FIXED) AND SPIRITS.—*Linseed*: In sympathy with rather lower prices for the seed; slightly easier rates are ruling for the oil. Spot is quoted £16 5s. in pipes, and £16 7s. 6d. in barrels. *Rape* steady at £28 to £28 10s. on the spot. *Cotton* dull, £16 15s. to £17 15s. *Coco-nut* firm; *Ceylon* on the spot £24 in pipes; *Cochin*, £28 10s. *Palm*: £24 10s. for *Lagos*. *Turpentine* is steady to rather dearer; spot, 21s. 3d. to 21s. 6d.; December, 21s. 6d. per cwt. *Petroleum Oil* quiet but steady; *American*, on the spot, 5⅞d.; *water white*, 7d. per gallon. *Petroleum Spirit*: *American*, 7⅜d. to 8d., and *deodorised*, 8d. to 8¼d. per gallon.

OPIUM.—No change has so far taken place on this market, which remains very quiet. Reports from *Smyrna* state that 200 cases have been sold for America at slightly advanced prices, and sellers are consequently now rather holding back in hopes of a maintained and even further advance, which position of the article would seem to warrant.

ORRIS ROOT —Is again quoted at higher prices, and reports state that the article is likely to go considerably higher. New crop, 72s. 6d. per cwt. for selected *Florentine* and 66s. 6d. for sorts, whilst *Veronese* is unchanged at 58s. and 54s. per cwt. for picked and sorts respectively, *c.i.f.* terms. *Powder* (very fine) 105s. to 111s. per cwt., *c.i.f.*, as to quality. In sale there were no bids for some *East Indian*. Good picked *Florentine* of old crop can still be bought in limited quantity at 72s. 6d. per cwt.

PODOPHYLLIN.—Is very firm at late advance, with rather irregular quotations; 11s. to 11s. 6d. per lb. would probably buy. One *German* maker has issued a circular warning against the article as hitherto supplied by well-known and reliable British manufacturers; these latter no doubt will be much obliged for the information, although were it not for the scarcity of eggs at this season of the year, the asuitable retort might appear somewhat obvious.

POTASH COMPOUNDS.—*Chlorate* is still very quiet, with too strong competition between English and Swedish makers; on the spot the article can be bought at 4d. per lb., but for shipping quantities lower prices rule. *Bichromate* is unchanged at 4¾d. per lb. *Prussiate*: English dull at 6¼d. per lb. *Cyanide*: A strong competition between British and Foreign makers has led to a further reduction in prices. *Permanganate*: Demand is quiet, and price without change, but makers can only just keep step with their engagements, and are somewhat chary of booking fresh orders, unless for distinctly later delivery.

QUICKSILVER — Quiet and unchanged. First hands, £6 12s. 6d., with second-hand sellers at 1s. 6d. less.

RHUBARB.—Position of the article is strong, and higher prices will probably have to be paid later on. In sale round *Canton* of medium to fair quality was held for 1s.; do., part round, part flat, for 10½d.; small flat *high dried* sold at 9d. to 9½d.; fair *Shenshi* at 1s. 8d., good ditto at 2s. 2d., while really fine was held for 3s. per lb.

SAFFRON.—The new *Spanish* crop is now practically a complete failure, owing to the floods in the growing districts, and prices have advanced 11s. per lb., making quotation for finest 48s. per lb. The little of the new crop that is available is not offered, owners expecting decidedly higher values. The *French* crop is also reported to be very short, whilst stocks of old crop are quite unimportant.

SARSAPARILLA.—Two bales *red and grey native* sold at 1s. 2d. per lb, subject to approval. *Honduras* was bought in at same figure.

SCAMMONY.—*Virgin*: Firsts and seconds are in fair supply, but demand is slack. *Roots* are quiet at 27s. 6d. to 30s. per cwt. *Resin* is easier at 8s. 3d. to 8s. 9d. per lb. for lumps, according to quantity.

SEEDS. — *Cumin* is rather dearer, fair *Malta* selling at 24s., while a better parcel was held for 30s. to 34s. per cwt. It is stated that there is prospect of the article becoming very scarce. *Aniseed*: 34 bags fair *Syrian* were held for 21s. per cwt. *Dill*: 25 bags from *Bombay* were held for 12s. per cwt. *Fennel*: 47 bags from same source at same price. *Strophanthus*: 2 bags fair *Kombé* taken out at 3s. 6d. per lb.

SENNA.—Over 600 bales *Tinnivelly* qualities were offered. Competition was exceedingly good, and bulk sold at full to dearer rates, viz., for the lower grades 1¼d. to 1¾d. per lb., while for anything with colour prices paid were decidedly dearer. *Alexandrian* leaves were not offered in auction, but privately are selling slowly at late rates.

SHELLAC.—The private sales since the public auctions last week have been small, although holders have been very firm, especially for forward delivery. For February delivery business in *TN* has been done at 87s. per cwt. At the sales on Tuesday fair supplies were offered, consisting mainly of *Second Orange*. Of 899 cases offered 520 cases sold at an advance of from 1s. to 2s. per cwt. Fine *Second Orange* bought in, fine flat free at 95s.; part block, 94s. per cwt. *Second orange TN*: 248 cases "without reserve" fair red curly strong at 84s., flat palish, 83s. to 84s.; fair red flat, same prices ordinary broken red, 81s. to 82s.; red livery, 81s. to 82s.; ordinary red Calcutta worked at 81s.; broken common liver, 72s. to 73s.; more or less cakey and blocky, fair bright red, 84s.; the same, slightly mixed, at 83s. down to 75s. to 78s. per cwt. for fair bright part flint block. Free *second orange* is

getting into a very narrow compass, and higher prices may be expected. Since the foregoing the market is again reported firmer at 2s. to 4s. per cwt. advance.

SODA COMPOUNDS. — *Crystals* continue unchanged at 42s. 6d. per ton, ex ship terms. *Bicarbonate*: 99 per cent., £7 10s. per ton; *Caustic*: 70 per cent. white, £8; with 60 per cent. at £1 per ton less; *Nitrate*, refined, £8 5s. per ton.

SPICES (VARIOUS).—Generally speaking, very quiet. *Pepper*: Not much doing on spot, but forward rather firmer, at about 2½d. to 2¾d. for *Singapore*. *White pepper*: *Penang* bought in at 3½d., and *Singapore* at 4¼d. to 4⅝d. *Chillies* and *Capsicums* dull. *Pimento* sold at 2⅜d., 2¼d., 2⅜d., according to quality. *Nutmegs*: 10 cases sold, 81's at 1s. 9d.; 66's bought in at 1s. 1d. for broken pickings, and 1s. 5d. to 2s. for ordinary good

TERRA JAPONICA.—*Gambier*: On the spot whole bales are quoted at 15s. 6d. per cwt. For arrival the market remains inactive and prices are nominal. *Cutch*: Privately 300 boxes double anchor brand have been sold at 11s. 6d. per cwt. At the auctions 1515 boxes, without reserve, sold common block at 7s. 9d. to 9s. per cwt.; inferior slabs at 9s. 6d. to 10s., and better at 12s. 6d. to 12s. 9d. per cwt.

TONQUIN BEANS,—Of 3 cases, 1 case fair frosted was held for 2s., remainder foxy at 10d. per lb.

TURMERIC.—55 bags *Madras* bought in at 11s. for rather dark, to 12s. 6d. for somewhat better finger.

VANILLOES.—The offerings only amounted to about 90 tins, and in these buyers took but little interest, owing to the fact that a fortnight hence a large quantity of new arrivals will be offered, when they hope to get in at lower prices than have of late been ruling. Good 7 to 7½ inch realised 24s. 6d., 6½ inch, 23s. 6d. and 6 inch, 22s. 6d. per lb.

WAX.—Two barrels good *Jamaica* sold at £8 5s. to £8 7s. 6d.; one half-barrel yellow and dark at £8. *Zanzibar*, *East Indian*, and *Australian* chiefly bought in. Of 15 cases yellowish block *Japan* 5 cases sold at 47s. 6d. per cwt.

LIVERPOOL REPORT.

NOVEMBER 11, 1896.

The chief features of the week's market are the continued advance in castor oils, the improved demand for and probable rise in price of quillaya bark, and some rather large sales of ginger. Owing to the recent advance in castor oil consumers of large quantities for technical purposes are turning their attention to olive oil, the demand for which is at present very good at the recent full prices.

BEESWAX—Has only sold to the extent of 5 bales *Gambia* at £6 15s. per cwt.

BICARBONATE OF SODA—Has risen to £7 per ton.

BORAX—Is quiet at 20s. per cwt., 21s. *powder*.

BLEACHING POWDER — Is steady at £6 15s. to £7 per ton *f.o.b.* Liverpool.

CANARY SEED—Is merely nominal in value at 30s. per 464 lbs. for *Turkish*, with little disposition to trade on the part of holders.

CAUSTIC SODA—Is steady at £7 10s. to £7 12s. 6d. per ton for 70 per cent. and £6 10s. to £6 12s. 6d. for 60 per cent., net cash.

CHLORATE OF POTASH.—Quiet at 4d. per lb.

COCHINEAL.—*Teneriffe* black grain continues to be held for 1s. 3d. per lb.

COPPERAS—Is very firm and quantity available on the spot small, *Lancashire* 38s. per ton, *Welsh* 36s.

GINGER.—During the week 40 tons of good *Sierra Leone* sold at 21s. 6d. per cwt., and 240 bags of washed *Cochin* at 29s., *ex* store.

GUM TRAGACANTH.—Good *Hog* gum has found buyers at 45s. per cwt.

LINSEED—Continues scarce, *American* has advanced 1s. per 416 lbs. for shipment, and the stock of all kinds on hand is much reduced. *Turkish* has been selling at 34s. to 35s. per 416 lbs.

OILS (FIXED) AND SPIRITS.—*Castor oil* remains firm at 3½d. per lb. for "good seconds"; *Calcutta*, 1st pressure, *French*, and *Madras*, the latter selling in small amount. *Olive Oils* meet with a good sale at firm prices, *Seville*, from £28 10s. to £29 5s. per tun; *Malaga*, £29 10s. to £30; and finer oils up to £35 per tun. *Linseed oil*: *Liverpool pressed* is unchanged since last week. *Cottonseed oil*: *Liverpool refined* and *American* are also as last week. *Spirits of Turpentine* is in quiet demand at 21s. 9d. per cwt.

POTASH SALTS.—*Potashes*, 21s. 6d. per cwt.; *Pearlash*, 35s. per cwt.

CREAM OF TARTAR.—Finest white is lower at 86s. 6d. to 87s. per cwt.

PRUSSIATE OF POTASH—Firm at 7d. per lb.

BICHROMATE OF POTASH.—4⅝d. per lb.

QUILLAYA BARK.—5 tons of *Chilian* were sold at £14 5s. per ton, and a further lot of 5 tons brought £4 10s.; prices at present have an upward tendency.

SODA CRYSTALS—Quiet at £2 10s. per ton.

MANCHESTER REPORT.

NOVEMBER 10, 1896.

The Board of Trade returns of exports continue to be unsatisfactory to the trade in this district. Although the decrease in imports is not very marked, that of heavy chemicals to the United States is most disquieting to those immediately interested. It may to some extent be compensated for this month by an increase of American orders consequent on the Presidential election, but from inquiries from different houses here this is not regarded by any means as certain. The effort to "even up" high strength caustic soda has not been entirely successful, and prices are unaltered. *Ammonia alkali*, 58 per cent., is, however, in fair request, and *Bleaching powder* is a trifle more active. *Soda crystals* remain dull. Makers of *Lancashire Sulphate of ammonia* are not offering, except at much higher rates forward. The drug and drysaltery trade is exceedingly quiet again, and with only an ordinary business passing. *Sulphate of copper* has gone up to £16 10s. per ton for best brands delivered here, and *Brown acetate of lime* is much firmer at £4 5s. to £4 7s. 6d. for *Welsh* at station, Manchester. *Yellow prussiate* is still held for best local makes at 6½d. to 6¾d. *Chlorate of soda* easy at 5d. for export, and 5¼d. home consumption. *Epsom* and *Glauber salts* salts unchanged. *Pitch* dull and lower, 27s. to 28s. *f.a.s.* ship canal. *Arsenic* firm and rather scarce. *Recovered sulphur* in demand at £4 12s. 6d. to £4 17s. 6d. per ton, bags, on rails.

NEWCASTLE REPORT.

NOVEMBER 10, 1896.

In keeping with the wave of better trade passing over business matters, this market for chemicals is more stirring. Inquiries have a firmer ring, and with sulphur and refined alkalies scarce a stronger tone is given to values. Sulphate of ammonia seems to have taken a turn as more is now changing hands. Bleaching powder is already being contracted for over 1897 at old prices. Salt cake in fuller request. South Durham salt very steady. Prices are:—*Sulphur*, £6. *Alkali*, £4 17s. 6d. to £5 7s. 6d., according to strength. *Sulphate of ammonia*, £8. *Bleaching powder*, on contract, £6 5s. to £6 10s. present; for prompt supply, £6 10s. to £7 10s. *Caustic soda*: 70 per cent., £7 2s. 6d. to £7 10s. *Soda crystals*, 37s. 6d. to 45s. *Soda ash*: 52 per cent., £4 5s. *Salt cake*, 19s. to 20s. *South Durham salt*, 9s. per ton, *f.o.b.*, *Tees*.

NEWS IN BRIEF.

THE MANCHESTER PHARMACEUTICAL ASSOCIATION, at a meeting on Wednesday last, discussed an important paper by Mr. W. A. Duncan, entitled "To what Extent should the Pharmacopœia be an Authority on the Purity and Analysis of Drugs?" the report of which we are unfortunately unable to publish this week. The chair was taken by Mr. William Kirkby, in the absence of the President, Mr. G. S. Woolley, and the discussion following the reading of the paper was taken part in by Messrs. Kidd, Kemp, Schollar, Lane, and Rymer Young.

THE BRIGHTON JUNIOR ASSOCIATION OF PHARMACY held its annual dinner on Wednesday evening, when the chair was taken by the President, Mr. A. T. Jeeves, who was supported by some thirty members and friends. Mr. W. W. Savage responded to the toast of the "Pharmaceutical Society," Dr. F. J. Paley for that of the "Medical Profession," and Messrs. J. Williamson and A. T. Jeeves for "The Brighton Associations of Pharmacy." Everything passed off very satisfactorily, but the exigencies of publication prevent further reference to the event in this week's Journal.

MR. R. A. ROBINSON, chemist and druggist, of Brompton Road, S.W., has been unanimously adopted as a candidate for the vacancy on the London County Council, caused by the resignation of Mr. C. E. Beresford-Hope.

PHARMACY IN NEWCASTLE-ON-TYNE is none too flourishing. Several businesses, principally of the drug-store class, have been offered for sale in this district lately, but have not proved sufficiently tempting to attract purchasers.

EXCHANGE—OFFERS AND WANTS.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partak of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Books, etc.

'Pharmaceutical Journal,' 23 bound volumes in good condition, 1851 to 1866, and 1886 to 1892, for 20s.—Cassia, 5, Serle Street, Lincoln's Inn, W.C.

A book of 130 Well-tried Recipes for Chemists and Druggists, comprising well-selected formulæ for general, remedial, veterinary, toilet, and everyday preparations. Post free, 1s. 6d.—Tully, Chemist, Hastings.

Attfield's 'Chemistry.' 11th edition; Roscoe's 'Chemistry'; Watts' 'Organic'; Kemshead's 'Inorganic'; Edmond's 'Botany.' What offers? Will exchange some for recent editions Newth's 'Chemistry' or Ganot's 'Physics.'—Roper, 2, South Street, Scarborough.

123 Medical Books (various) from a surgery; 79 Braithwaith's 'Retrospect of Medicine,' from year 1841 to 1880.—"Elixir," 'Pharm. Journal' Office, 5, Serle Street, London, W.C.

What offers —'Virgil,' Books 1, 2, 3; 'Cæsar' Book 1 and Vocabulary; Smith's '1st Latin Course'; Hamblin Smith's 'Arithmetic' with Answers; Cassell's 'French Dictionary.'—Middleton, 2, The Pavement, South Norwood.

OFFERED—(*continued*).

For Sale.—Complete set vols. 'Pharmaceutical Journal,' third series, bound half calf, 23 vols. What offers?—M.P.S., Literary and Philosophic Club, Berkeley Square, Bristol.

Shop Fittings, etc.

Three Show Jars, as Maw's Fig. 2, page 273, 24 inches S.C., with stand, 26s. 6d. each; what offers.—Brearley, Chemist, East Greenwich.

Two Specie Jars (Maw's), 24 in. to shoulder, in fair condition; also two slate stands for above.—Jeffreys, Chemist, Cheltenham.

Miscellaneous.

Folding Bagatelle Board, 8 feet by 2 feet, 1¾-inch balls, cue and bridge; cost £4, will take £2.—Stead, Chemist, Heckmondwike.

Pair Polished Brass Hanging Lamps, 200 candle, Rochester burners, magnificent light, suitable for very large room; cost 35s. each, will take 25s. each.—Stead, Chemist, Heckmondwike.

Magic Lanterns, second-hand; Wrench's telescopic triple and biunial; Ladd's oxyhydrogen microscope; grand biunial patent pamphengos oil; lantern, gives 14-ft. picture; slides and effects, bargains; illustrated list post free, 2d.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

OFFERED—(*continued*).

6×2 in., 7×1 in. Lilac Jars, labelled; 13×10 oz., 12×20 oz., 13×40 oz. N. M. Shop Rounds, labelled; 9×40 oz., 6×20 oz. W. M. Shop Rounds, labelled, Maw's make, cheap.—Hall, 1, Beverley Road, Hull.

Enterprise tincture-press; medicine chest (Maw's No. 2B); 2 specie-jars (Maw's fig. 1), 33 in., with stands; Oertling's weights, complete set; gas ophthalmoscope lamp, with condenser; pocket dressing-case (similar Maw's 33); arm-sling (210 Maw's); 12 Law's Cyprus remedy.—Particulars, Williams, Bournemouth.

WANTED.

'Manual of Botany,' vols. I. or II., or both (Professor Reynolds Green); must be in good condition and cheap. Apply—H. M., 17, Bloomsbury Square, London, W.C.

'Year-Book of Pharmacy' for 1886, 1891 and 1892.—Editorial Department, 17, Bloomsbury Square, London, W.C.

Wanted, Attfield's 'Chemistry,' 15th ed. Wills' 'Materia Medica' (adapted for the Minor); 'Art of Dispensing.'—State editions and lowest price, Stoneman, 1, Orchard Gardens, Teignmouth.

IRISH PHARMACISTS want to know who has been leading the gifted editor of *Truth* astray concerning the relative value of English and Irish pharmaceutical diplomas. It is suggested that perhaps his messenger, overpowered by the magnificence of the Bloomsbury palace of pharmacy, and the grandeur of the hall porter (if he beats the Mount Street one he must be grand); and, withal, so impressed by that functionary's views on the "mere Irish," felt it unnecessary to seek to penetrate further into "the mystery of an apothecary."

"POOR LABBY!" May it comfort your heart that the *Irish Independent* thus tenderly speaks of you; while, "more in sorrow than in anger," it upbraids you for your ignorance! A curious jumble is *Truth's* paragraph; first an "Irish Apothecary" is the subject, then thoughts of some worthy graduates from the Square must have tinctured the editor's mind; until, at last, the wrongs of Erin brought to his remembrance some bacon and butter druggist discovered in some out of the way village of the Green Isle.

THE PHARMACEUTICAL CRICKET AND FOOTBALL CLUB will hold its annual smoking concert at the Holborn Restaurant (Crown Room) on Thursday, November 26, at 8 p.m. Professor J. Reynolds Green, F.R.S., D.Sc., F.L.S., will occupy the chair. Tickets (1*s.* 6*d.* each) may be obtained from Mr. Ernest A. Umney, 17, Bloomsbury Square, W.C.

PHARMACEUTICAL FOOTBALL CLUB *v.* BLOOMSBURY RESERVES.—This match, played on Saturday last at Crouch End, resulted in a victory for the visitors. The home team played one man short. Score: Pharmaceutical, 7; Bloomsbury Reserves, *nil*. The pharmaceutical team showed some improvement in style and combination. Webster played centre half back, where his fine kicking was of the greatest service. Day and Happold worked well, Day scoring three times and Happold twice. The other points were gained by Tebbutt and Jackson.

Team:—Matthews, goal; Jones and Happold, backs; Nelson, Webster, and Smith, half backs; Day, Tebbutt, Fothergill (centre), Chandler and Jackson, forwards.

THE PERTH RUSH seems quite anomalous for such a sleepy little town, and should afford food for reflection to all beginners in search of a resting place. No less than six new pharmacies have been opened there during the past two and a half years, making a grand total of twelve pharmacies for a population of thirty thousand. The latest addition is a handsome pharmacy in Scott Street, conducted on store principles by Messrs. Hunter and Ferguson.

DR. DAVID LEES, late of the Glasgow School of Pharmacy, is leaving that city to take up medical practice in Greenock, and a committee has been formed with a view to making a presentation to him.

MR. WALTER J. HEALY, M.P.S.I., of Drogheda, has been appointed Manager of the Medical Hall, Castlebar.

MR. ALDERMAN HENRY DAVID SIMPSON, wholesale druggist, was elected Mayor of Louth for the fifth time. Mr. Simpson, who is the oldest member of the Corporation, is a Conservative, and filled the civic chair in the years 1876, 1877, 1883, and 1895.

MR. PETER HALL has closed his business in Pilgrim Street, Newcastle-on-Tyne, and opened in a suburban neighbourhood. His new locality is Heaton Road.

MR. GEORGE MARSHALL has sold his business at Birtley, and is about to open in new premises, which he has erected on the Sandyford Estate, Newcastle.

DIARY OF THE WEEK.

SATURDAY, NOVEMBER 14.

PHARMACEUTICAL FOOTBALL CLUB *v.* Bryanston, at Wormholt Farm, Shepherd's Bush. Kick off at 3. Trains from Gower Street at 1.58 and 2.15.

WEDNESDAY, NOVEMBER 18.

PLYMOUTH, STONEHOUSE, AND DEVONPORT CHEMISTS ASSOCIATION.
Annnal Dinner at the Royal Hotel, Devonport.

WESTERN CHEMISTS' ASSOCIATION (OF LONDON), at 7 p.m.
Annual Dinner, Café Royal, Regent Street, W.

ROYAL MICROSCOPICAL SOCIETY, at 8 p.m.
Ordinary Meeting.

BRIGHTON JUNIOR ASSOCIATION OF PHARMACY, at 9 p.m.
Social and Musical Evening.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION, at 9 p.m.
Musical and Social Evening.

THURSDAY, NOVEMBER 19.

CHEMICAL SOCIETY, at 8 p.m.
Miscellaneous Papers.

CHEMISTS' ASSISTANTS' ASSOCIATION, at 8.30 p.m.
"Notes on American Pharmacy," by E. H. Gane

GLASGOW AND WEST OF SCOTLAND PHARMACEUTICAL ASSOCIATION, at 9 p.m..
"The Relation of Medicine to Pharmacy," by Alex. Laing.

LINNEAN SOCIETY, at 8 p.m.
"On the Structure and Development of the Hyobranchial Skeleton and Larynx in Xenopus and Pipa, with remarks on the Affinities of the Aglossa," by W. G. Ridewood.
"Amphipoda from the Copenhagen Museum and other Sources," by Theo. R. R. Stebbing.

FRIDAY, NOVEMBER 20.

PHARMACEUTICAL ASSISTANTS' ASSOCIATION OF IRELAND, at 8 p.m.
Election of Officers, etc.

SHEFFIELD MICROSCOPICAL SOCIETY, at 8 p.m.
"The Optics of the Microscope," illustrated by the Lantern, by A. H. Allen.

SATURDAY, NOVEMBER 21.

MANCHESTER COLLEGE OF PHARMACY, at 7 p.m.
Conversazione and Musical Evening.

LATE ADVERTISEMENT.

To be Sold.

THE FITTINGS of a first-class West-end Chemist. On view at 26, Sussex Gardens, Hyde Park.

« Market Report »

And Prices Current of Drugs, Chemicals, Oils, and Seeds.

The quotations here given are in all cases the lowest net cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

[Specially Compiled for the 'Pharmaceutical Journal.']

LONDON REPORT.

LONDON, NOVEMBER 19, 1896.

The past week has not been productive of any great changes in the Drug and Chemical Market, while actual business has been decidedly slow. The hope, so freely expressed, that we were at last entering into a new and brighter period as regards trade generally has by no means been abandoned, this hope is, however, somewhat slow, not to say disappointing, in its progress towards realisation. As an instance of the actually existing depression in the heavy chemical trade it may be mentioned that Brunner, Mond, and Co. are said to have lately discharged a number of hands, and to have placed others on short notice, while the United Alkali Company is reported to have issued instructions that workers in their chemical factories at St. Helen's and Widnes, other than labourers, are to be put on short time, viz, forty-two hours per week until February next. Acid carbolic is dearer and likely to further advance in value. The rise in cardamoms continues. Shellac is again dearer. Ipecacuanha weak. Quinine quiet, but steady. Opium, morphia, and codeia dull and unchanged. Glycerin quiet. Saffron very firm and likely to be dearer. Balsam Peru is easier. Orris root firm with higher prices expected. The following are the prices ruling for articles of chief interest :—

ACID CARBOLIC.—Very firm, and tangibly dearer, and it is stated that there is probability of price being not inconsiderably higher in the near future, one maker being sold out up to June next, while another of the best and largest makers refuses to sell below 7d. per lb. for 35 to 36° acid, *ice crystal* in 2½-cwt. drums and overcasks, other qualities and packing in proportion. *Crude*: 60°, 2s.; 75°, 2s. 6d. per gallon. *Liquid*: 95 per cent., 1s. 1d. per gallon.

ACID CHRYSOPHANIC—Is quiet but steady at about late price, say 21s. to 22s., according to make and quantity. In view of existing high price, buyers only cover their actual immediate requirements.

ACID CITRIC.—Very quiet at 1s. 1¼d. to 1s. 1½d. per lb. for commercial quality. B.P. is quoted by English makers at 1s. 2¼d. to 1s. 2½d. per lb. as to quantity, whilst second-hand sellers offer at rather below these figures.

ACID OXALIC.—Unchanged at 3¾d. per lb, net.

ACID TARTARIC.—Tending lower. *English* being quoted at 1s. 1d. per lb. *Foreign*: 12½d. to ⅝d. per lb.

AMMONIA SALTS.—*Sulphate* closes quiet at an advance on last week's rates; grey prompt, 24 per cent., London, £8; *Beckton* terms, prompt, £7 17s. 6d. per ton. *Carbonate* very firm at last prices. *Sal ammoniac* also very firm at 37s. per cwt. for *firsts*, and 35s. per cwt. for *seconds*.

BALSAM.—*Canada* continues unchanged at 1s. per lb. in casks, and 1s. 2d. per lb. in tins. *Copaiba* is firm at 2s. 1d. to 2s. 2d. per lb. *Peru* is easier at 7s. 3d. per lb. *Tolu*: At present the anticipated further drop in prices has not come about, 3s. to 3s. 3d. per lb. being still the quotation for genuine.

BLEACHING POWDER—In fair demand at £7 10s. to £7 15s. per ton, as to quantity.

CAMPHOR—Is quiet, spot price for *crude* being 127s. 6d. per cwt. for *China* and 135s. per cwt. for *Japan*. For arrival *China* is weaker, and is quoted nominally at 112s. 6d. per cwt., *c.i.f.* *Refined* unchanged.

CARDAMOMS—Continue their upward course, sales having been made this week at 4s. 9d. to 4s. 10d. per lb. for fair *Mysores*, which in the sales of 29th ult. fetched 3s. 6d. to 3s. 7d. per lb.

CLOVES.—Have been a fluctuating market this week. *Zanzibar* for delivery advanced to 2 13/32d. for January-March, but closing quiet and easier at 2⅜d. per lb. At auction only 283 bales *Zanzibar* were offered; of this small quantity only 80 bales sold, middling dull, at 2⅜d. per lb. *Penang*: 1 case very fine bright picked sold at the full price of 10d. per lb.

COAL TAR DISTILLATION PRODUCTS.—*Toluol*, 2s. 2d. per gal. *Benzole*, 50 per cent., 3s.; 90 per cent., 4s. 3d. *Crude naphtha*, 30 per cent. at 120° C., 1s. 5d. *Solvent naphtha*, 95 per cent. at 160° C. 1s. 9d.; 90 per cent. at 160° C. 1s. 6d.; 90 per cent. at 190° C., 1s. 2d. per gallon.

COCHINEAL.—*Silver grain* is lower at 1s. 4d. per lb. for No. 1, and 1s. 2d. per lb. for No. 2. *Black grain* is steady at 1s. 4d. per lb. for No. 1, and 1s. 1½d. per lb. for No. 2.

CODEIA.—No change to report, market distinctly quiet, especially for the season of the year, at 11s. 6d. per oz. for quantity.

COD-LIVER OIL.—*Norwegian* is very quiet and dull of sale, and the anticipated demand has not yet made itself felt; consequently sellers are, in some cases, rather easier in their quotations, which range from 150s. to 170s. per barrel, according to brand and seller. *Newfoundland* continues in fair demand with sellers at 6s. to 6s. 3d. per gallon on the spot, and 5s. per gallon for ordinary quality to arrive.

CREAM OF TARTAR—is again lower and very dull at the decline. *Crystals* are quoted 81s. per cwt. for first white, and 83s. to 84s. per cwt. for good *powder*.

ERGOT OF RYE—Remains very quiet, with but little business doing in the article, price varying from 4d. to 6d. per lb., according to quality, condition, etc. It is thought that a better demand would at once lead to an advance in price.

FLOWERS (VARIOUS).—*Chamomile*: 27s. 6d. to 62s. 6d. per cwt. as to quality. *Arnica*; 67s. 6d. per cwt. *Red poppy*: 125s. per cwt. *Lavender*: 30s. per cwt. for foreign.

GINGER.—The market continues very firm, especially for the finer kinds. At the public auctions held on Wednesday *Cochin* met a good steady demand, and of 775 bags offered 495 bags sold well—low shrivelled pickings at 16s.; tips and cuttings, 24s.; fair medium and small washed rough, 30s. to 31s.; ordinary, part lean, 29s.; good bright, 33s.; medium cut, 74s. per cwt.; of 47 cases 35 sold—small and ends, wormy, 33s. 6d.; small, part cut, 39s.; good bold, 81s.; fine bold A cut, 85s.; 100 bags *African* bought in at 23s. per cwt., and of 40 barrels *Jamaica* low middling small scraped sold at 84s. to 85s., and good bold bright washed at 115s. per cwt.

GLYCERIN.—Fairly steady at 70s. to 75s. per cwt., according to brand.

IPECACUANHA.—*Rio* is quiet, with buyers at 5s. 6d. per lb., but there seems to be no sellers thereat. *Carthagena*: A few bales have changed hands this week at 4s. 3d. per lb.

LEAVES (VARIOUS).—*Belladonna exot.*; 42s. 6d. per cwt. *Hyoscyamus exot.*: 35s. to 45s. per cwt. as to quality. *Stramonium*: 24s. to 24s. 6d. per cwt.; *rubbed*, 29s. 6d. per cwt. *Uvæ ursi*: 28s. 6d. per cwt. *Patchouli*: 65s. per cwt.

LYCOPODIUM—Is lower, sales having been made at 1s. 6d. per lb.

MENTHOL.—Price for spot has come down more nearly to that quoted for arrival, 7s. 9d. per lb. being quoted for former position, while 7s. to 7s. 3d. per lb., according to brand, is asked for shipment.

MORPHIA.—Market quiet at late reduction, price being 5s. per oz. for *powdered salts* in quantity.

Oils (Essential).—*Cassia* is now very slow of sale, since this market was practically cleared for America of all the better grades. *Star aniseed* very quiet and rather easier at 8s. 4½d. per lb. on the spot. *Ylang Ylang* is becoming very scarce and prices will probably be dearer. The trouble in the Philippines causes difficulty in getting the flowers in fresh condition. *Citronella* very firm at 1s. 4d. per lb. in tins. *Peppermint HGH* is firm at 7s. 9d. per lb. *Wayne County* 5s. 6d. to 5s. 9d. per lb. for finest *Japan* dementholised 3s. 6d. per lb.

Oils (fixed) and Spirits.—*Castor*: Price of this continues to harden, and fine *Italian decorticated* is now quoted 42s. 6d. per cwt. *Linseed* is again weaker at £16 2s. 6d. in pipes, landed. *Rape* is firm for refined at £28 10s. *Cotton* dull and lower at £16 5s. to £17 5s. for refined, according to make and package. *Coco-nut* steady and slightly dearer at £24 5s. for *Ceylon* on the spot, and £28 for *Cochin* on the spot. *Palm* unchanged at £24 10s. for *Lagos* on the spot. *Turpentine* is lower and very dull; *American* on the spot, 20s. 9d. per cwt.; December, 20s. 10½d.; January to April, 21s. 4½d. per cwt. *Petroleum Oil* neglected; *American* on the spot, 5⅛d. to 5⅞d. per gallon; *water white*, 7d. per gallon; *Russian*, on the spot, 5⅞d. to 5½d. per gallon. *Petroleum Spirit* unchanged. *American*, 7⅜d. to 8d.; *deodorised*, 8d. to 8¼d. per gallon.

Opium.—Very little doing, and without change at 9s. to 11s. 6d. per lb. according to quality, etc.

Orris Root.—Both France and the United States have been buying freely, and whilst prices have not changed this week, the article is exceedingly firm.

Podophyllin.—The demand continues active, and from 11s. 6d. to 12s. 6d. per lb. has been paid this week for B.P. quality. The root has also risen considerably, being now quoted 40s. per cwt. against 20s. some little while ago. The demand for the resin is stated to come mainly from South Africa, fairly large quantities having been ordered by cable from Cape Town. It is thought that this demand is on account of the rinderpest outbreak, but details of its use have not yet come to hand. Whether this demand will continue, and whether the rise in the value of the root is really due to scarceness, as stated from America, remains to be seen; but it would at least appear probable that it will be some few months, if not longer, before prices return to their normal condition.

Potash Salts.—*Chlorate* continues quiet at 4d. per lb. on the spot. *Prussiate* dull at 6¼d. to 6½d. per lb. for yellow. *Bichromate* unchanged at 4¾d. per lb. *Bicarbonate* steady at 30s. to 32s. 6d. per cwt. *Cyanide*: Competition is still forcing down prices, 99 to 100 per cent. being nominally quoted at 1s. per lb., but for large orders this price has been shaded.

Quicksilver—Is unchanged at £6 12s. 6d. per bottle from first-hand, while second-hand holders offer at 1s. less.

Quinine.—Makers are booking orders for delivery within 60 days at 9½d. per oz. for *German* brands in bulk, buyers, as a rule, preferring this to paying 9¾d. per oz. for old make on the spot from second-hands. Still, there is very little disposition to contract for more than may be required during the 60-day period, as the next movement, whether up or down, is extremely doubtful. At the moment it does not appear to be merely a question of supply and demand.

Roots.—*Aconite*: 37s. 6d. to 40s. per cwt. *Belladonna*: Good root continues scarce, and 46s. per cwt. is asked for same. *Gentian*: 27s. to 28s. per cwt. is now asked for really good quality. Sales had previously been made somewhat below this figure, more is however no longer obtainable at such lower rates. *White Hellebore*: 24s. per cwt.; *Liquorice* 33s. per cwt. is quoted for prime *Russian decorticated*.

Saffron.—For old crop 46s. to 48s. per lb. is quoted for *Valencia* of finest quality, whilst for new crop 52s. per lb. is asked. Holders are very firm in the expectation of higher prices later on, owing to short supplies. Some saffron of old crop and not very bright is offering at 39s. 6d. per lb.

Seeds (various).—*Colchicum*: 42s. 6d. per cwt. *Fennel*: Syrian 18s. 6d. per cwt. *Teazle*: 9s. 6d. per cwt. *Aniseeds*: Spanish are quoted 27s. 6d. per cwt. *Celery*: 33s. per cwt. *Strophanthus*: Kombé are quoted 3s. 6d. to 3s. 9d. per lb. for quantity.

Shellac.—Whilst but little business has been done privately during the week, the public auctions on Tuesday passed off with animation, at an advance all round of fully 2s. per cwt. The supply was small, the total being only 189 cases, of which 184 cases sold. Of *Second Orange* 174 cases were offered and all sold, partly "without reserve," all more or less cakey and blocky; fair to good bright *TN* at 85s. to 88s.; ordinary to middling red at 79s. to 82s.; flint block, 77s. to 78s. per cwt. For arrival good *Orange* has been in request, and 500 cases sold on private terms, said to be about 92s. per cwt. *TN* sold, December-February steamer, 85s. per cwt., *c.i.f.* terms.

Soda Salts.—*Crystals* are quiet at 47s. 6d. to 50s per ton on the spot as to quantity. *Bicarbonate*, 99 per cent., quiet at £7 5s. to £7 10s. per ton; free from mono-carb., 17s. 6d. to 18s. per cwt. *Caustic* steady at £8 per ton for 70 per cent. white, and £7 for 60 per cent. *Hyposulphite* 8s. per cwt. for good.

Spices (Various).—*Nutmegs* continue, quiet, *Penang* selling 67s. at 2s. 9d. per lb., other sizes being bought in. *Travancore*: 165's sold at 7½d. per lb. *West Indian* sold, mixed to fair shape and colour: 72's at 2s. 11d., 88's at 1s. 6d., 92's at 1s. 4d., 115's at 1s. 2d. per lb. *Mace* is dull. *Penang* sold in part, fine bold pale, 2s. 9d. per lb. *West Indian*: good middling at 1s. 8d., pickings 1s. 1d. to 1s. 2d. per lb. *Pepper* very dull and all bought in: *White Pepper* sold in part., *Penang* at 3⅞d. per lb.; *Siam* and *Singapore* qualities bought in. *Chillies* very quiet: *Zanzibar* bought in. *Japan*: very fine bright red sold 50s. bales, and 55s. in cases. *Pimento* sold at steady rates: fair, 2⅛d.; good clean, 2⅜d. per lb.

Terra Japonica.—*Cutch* remains very quiet, with only small sales at late rates. Shipments from *Rangoon* from Jan. 1 to Nov. 14 to all parts amount to 8180 tons, as against 7930 tons last year, and 9500 tons in 1894. *Gambier*: On the spot there is little doing, with quotations unchanged, but for arrival the market is dull and easier.

Wax (Japan)—Is quiet, but steady; 50 cases have been sold this week for arrival October to November steamer at 41s. per cwt., *c.i.f.* terms.

NEWCASTLE REPORT.

November 18, 1896.

The prospect is still hopeful, and with a scarce supply of some makes prices all round remain steady. Yearly contracts are being covered principally at old figures; present quotations:—*Sulphur*: £5. *Alkali*: 52 per cent. and up, £4 17s. 6d. to £5 7s. 6d. *Sulphate of ammonia*: £8 to £8 2s. 6d. *Bleaching powder*: £6 10s. to £7 10s. *Caustic soda*: 70 per cent., £7 2s. 6d. to £7 10s. *Soda crystals*: 37s. 6d. to 45s. *Soda ash*: 52 per cent., £4 5s. *Saltcake*: 20s. *South Durham salt*: 9s. per ton *f.o.b.*, *Tees*.

LIVERPOOL REPORT.

November 18, 1896.

The general tone of the market has considerably improved since the conclusion of the American elections, and things are brisker all round. The rise in quillaya bark predicted last week has taken place, and the very firm prices obtained of late for castor oil of all kinds have still further increased. In consequence of the failure of the Spanish olive crop and the small crops in Italy and Sicily, olive oils from these countries will be scarce, and if it were not that there is a good yield of Candia and Levant oils, prices would rise considerably. As it is they are very firm, and holders show no great disposition to sell at present rates. Bad news concerning the River Plate linseed crops has limited the transactions, as stocks are being held in view of a further rise.

Beeswax—During the week has been brisk at recent prices. *Peruvian*: £7 per cwt.; *Chilian*: £7 5s., and 24 packages *Sierra Leone* at £6 2s. 6d.

Bicarbonate of Soda.—£6 15s. per ton, or 7s. less than last week.

Borax—Remains at 20s. per cwt., and 21s., *powder*.

Bleaching Powder—Is now £6 12s. 6d. per ton.

Canary Seed—Is very slow of sale, but inquiry is good, price is about 28s. 6d. to 29s. per 464 lbs. for *Turkish*.

Carnauba Wax.—Good grey variety has found purchasers at 55s. per cwt.

Caustic Soda—Is unchanged from last week's quotation.

Chlorate of Potash: 4d. to 4½d. per lb.

Copperas—Still dear, 38s. per ton for *Lancashire*; 36s., *Welsh*.

Cream of Tartar—Though lower again in price sells but slowly at 82s. 6d. per cwt.

Honey.—Twenty cases *Californian* made 27s. 6d. to 30s. per cwt.; inquiry good.

Linseed — Continues to be sparingly offered; 50 bags of Turkish "feeding" sold *ex* store at 35s. per 416 lbs.

Oils (fixed) and Spirits.—*Castor oil* continues to advance; *Calcutta*, 3¾d. per lb.; *French*, first pressure, 3½d. to 3⅝d.; and *Madras*, 3⅝d. Sales of *French* have been made at 3½d., but none is now to be had under 3⅝d. *Olive oils* are firm and inclined to higher prices, stocks here being

much reduced, and returns for the month of October show a decrease in importation of 1201 tuns on last year's figures. *Linseed oil, Liverpool* pressure, 17s. 3d. to 18s. 6d. per cwt. *Cottonseed oil, Liverpool* refined, 16s. 6d. to 17s.; *American*, 18s. per cwt. *Spirits of turpentine* has dropped in price to 21s. 6d. per cwt.

Pearlash.—35s. per cwt., as last week.

Potashes.—21s. 6d. per cwt., as last week.

Prussiate of Potash—Has become lower in price, viz., 6½d. per lb.

Quillaya Bark.—12 tons of *Chilian* sold at £14 10s. to £15 per ton, and stock is now held at £15 5s.

Soda Crystals.—Firm at £2 7s. 6d. per ton.

Spermaceti.—A consignment of *Chilian*, consisting of 45 sacks, sold ex quay at 60s. 3d. per cwt.

MANCHESTER REPORT.

November 18, 1896.

There is a generally better feeling all round, and, it is now stated, a "boom" has set in for certain articles, especially from the United States. Since last week houses here have received large orders. Although there are rumours that the recent sharp advance in sulphate of ammonia is induced mainly by the anxiety of speculators to cover their wants, others are of opinion that the improvement will be continuous. sellers are not offering forward, especially in Lancashire. *Chlorate of soda* is fairly firm at 5d. per lb. all round. *White caustic soda* displays a "hardening" tendency. *Sulphate of copper* has advanced and closes active at £16 10s. to £17 per ton, best brands, delivered Manchester. *Brown acetate of lime* is quoted £4 7s. 6d. for *Welsh* here. *Soda crystals* are in fair request at 37s. 6d. per ton in bags on rails. No change is reported in *ammonia alkali*, 58 per cent., but *Bicarbonate of soda* is 5s. to 10s. per ton higher. *Yellow prussiate* is easior fer Lancashire make, and ranges from 6¼d. to 6½d. *Alum* and *Sulphate of Alumina*: Unchanged. *Lancashire green Copperas*: Active at 38s., *f.o.b.* Liverpool, and 31s. to 32s. *f.a.s.* Manchestr. *Acids* are dull. *Epsom Salts*: Unchanged at 55s. to 57s. 6d. per ton, bags; *Glaubers*: 25s. to 27s. 6d. *Pitch*: Dull, and nominally 28s. *f.a.s.* ship canal here.

PLYMOUTH, DEVONPORT, STONEHOUSE AND DISTRICT CHEMISTS' ASSOCIATION.

The third annual dinner of the Plymouth, Devonport, Stonehouse and District Chemists' Association was held at the Royal Hotel, Devonport, on Wednesday evening. Mr. George Breeze presided and was supported by the Mayor of Devonport (Mr. W. J. Waycott, J.P.), and a large gathering, numbering about seventy.

The toast of "The Pharmaceutical Society" was proposed by Mr. J. D. Turney, who said the principal idea in the minds of chemists of the three towns when they formed an association was to be brought into more direct communication with the Pharmaceutical Soci Messrs. C. J. Park, C. B. Allen (London), E. M. Holmes, F. W. Hunt, and F. Maitland responded. "Our Municipalities" was submitted by Mr. W. H. Mathew, and the Mayor of Devonport and Mr. H. Whitfeld replied.

Messrs. R. W. Stephens and W. J. Lamb replied on behalf of "The Plymouth Mercantile Associations," proposed by Mr. J. G. Netting.

"The Plymouth, Devonport, Stonehouse and District Chemists' Association" was proposed by Mr. H. Gadd, J.P., and responded to by Mr. G. Breeze, whilst Mr. R. D. Kelly submitted "The Officers of the Association," to which Mr. J. Cocks (Hon. Secretary) and Mr. J. Condy U'Ren (Hon. Treasurer) replied.

Mr. E. M. Holmes proposed "The Junior Section," and Messrs. J. A. Buckley and E. A. Hodge replied. Other toasts were "The Hon. Members," proposed by Mr. J. W. B. Swainson, and responded to by Mr. J. K. Bond; and "The Ladies," submitted by Mr. J. H. Bailey, and replied to by Mr. W. H. Woods. Those who contributed towards the musical programme were Major Rendle, Messrs. J. K. Bond, J. D. Turney, Williams, Johnston, Luxton, and Harris.

NEWS IN BRIEF.

A Travers Lecture on "Recent Researches in Commercial Fibres" will be delivered at the London Institution, on Monday evening, November 30, by Dr. D. Morris, C.M.G., Assistant-Director of the Royal Gardens, Kew. In view of the considerable interest taken at the present time in China grass and ramie, these fibres will be particularly dealt with. The lecture will be illustrated with lantern slides and specimens.

Pharmaceutical Football Club *v.* Bryanstone.—This match was played on Saturday last at Wormholt Farm. Scores: Pharmaceutical, 2; Bryanstone, 1. The visitors showed strong combination, and gave their opponents a very good game. From start to finish the fight was most stubborn, each man putting forth his utmost exertions to carry the day for his side. In the first half the Pharmaceuticals got one goal, and scored again in the second half. Shortly before the finish the Bryanstone forwards rushed the ball up the field, and shot successfully. Both teams are deserving of congratulation upon their capital form and spirited play.

Team:—Lean, goal; Jones and Surfleet, backs; Nelson, Webster, and Smith, half-backs; Happold, Jackson, Fothergill (centre), Tebbutt, and Day, forwards.

Poisoned Wheat having been unlawfully sold by Samuel Bullen, of Ditchingham, a killer of vermin, he was fined ten pounds at Bungay Petty Sessions on Thursday, November 12. The grain was found to contain 1½ per cent. of strychnine.

Proprietary Specifics should not be permitted to pose as patent medicines, says the *Financial Post*, as there is no patent in the medicines, and the Government stamp used simply indicates that it is a proprietary article. "It would be well if the Government, before issuing the stamp, should demand to see the formula, and should require that the ingredients of the mixture and their proportions should be clearly stated on each box or bottle that is sold; and, further, that medical men must discontinue to sanction the use of any of these quackeries if they have ever, as has been alleged, been tempted or paid to do so.'

Idris and Co., Ltd., held their annual meeting on Wednesday, November 11, Mr. T. H. W. Idris in the chair. The balance-sheet showed a considerable increase of business and a corresponding increase of profits. Dividends of 6, 7, and 10 per cent. were declared on the various classes of shares. The Reserve Fund was made up to £16,000, the Sinking Fund added to, the Profit Sharing Fund increased, and a considerable sum carried forward. Everything, in fact, indicated a most prosperous state of affairs.

Mr. John C. Wiggin, pharmaceutical chemist, Ipswich, writes to the *East Anglian Daily Times* pointing out the value of compressed oxygen as a restorative in cases of drowning.

Mr. Thomas H. Chappelow, chemist and druggist, of Ashburton, Devon, has purchased the business carried on at Highbridge by the "Somerset Drug Company, Limited."

The Midland Chemists' Assistants' Association has made an alteration in the programme for December 9. Instead of the conversazione being held on that date the first annual ball will take place the following day, in the Edgbaston Vestry Hall.

Mr. Alexander Fraser, chemist and druggist, of 106, Morrison Street, Edinburgh, has opened a high-class pharmacy at 84, Comiston Road, South Morningside.

Mistaking Carbolic Acid for Whisky caused the death of a mason named Dugald Mathieson (40) at Parson Street, Glasgow, on November 15. The carbolic acid bottle was on the mantel-shelf, while a small bottle of whisky had been placed on a chest of drawers in the room. He rose at eight o'clock in the morning, and in the darkness committed the fatal error.

The Westminster College Dinner will be given in the Throne Room, Holborn Restaurant, on Friday, December 4, at 6.30 o'clock, and followed by a Cinderella dance at 9 p.m.

The Aberdeen Junior Chemists' Association held a smoking concert in the County Hotel on Friday, November 6, Mr. C. Forbes, Hon. President, in the chair. The toast of "The Association" was heartily responded to. After a good programme had been gone through a very enjoyable evening was brought to a close and a hearty vote of thanks accorded to the chairman.

Cinderella Dances will be held by the Chemists' Assistants' Association on December 3, 1896, February 4, 1897, and March 25, 1897. Applications for tickets should be made to Mr. H. H. Robins, 59, Capel Road, Forest Gate, E.

EXCHANGE—OFFERS AND WANTS.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Books, etc.

For Sale.—Complete set vols. 'Pharmaceutical Journal,' third series, bound half calf, 23 vols. What offers?—M.P.S., Literary and Philosophic Club, Berkeley Square, Bristol.

What offers?—202 Medical Books (various), all in good condition, the property of a medical man, deceased.—"Elixir," 'Pharm. Journal' Office, 5, Serle Street, London, W.C.

Photographic Apparatus.

Twelve each Cresco-fylma Co.'s platinum toner, gold toner, uranium intensifier, toner and fixer, 18 developer. Six packets each Argura paper, quarter, half, whole, and special cabinet sizes, all new and clean. Two glass-fronted mahogany cases. 3 ft. 2 in. high, 2 ft. wide, 5 ins. deep. What offers?—Tottle, Chemist, Epsom.

Watson's 2-guinea Fluorescent Screen, new, 35s.—Woolley, Chemist, Dresden Road, N.

"X" Ray Fluorescent Screens, 5 by 4, 2s.; 6½ by 4¾, 3s.; 8½ by 6½, 5s.; 10 by 8, 6s. Fluorescent Cyanide for making your own screens, 5s. per ounce.—Pickering, Chemist, Leicester.

For Sale.—2 oz. Cocaine Hydrochlor., pure; 2 lenses, ½-plate (German); Pickard's Shutter, 2½ inch, new, what offers? Two Pocket Kodaks, new, 14s. each.—Ross, 193, Chapel Street, Salford, Manchester.

OFFERED—(*continued*).

Miscellaneous.

Magic Lanterns, second-hand; Wrench's telescopic triple and biunial; Lada's oxyhydrogen microscope; grand biunial patent pamphengos oil; lantern, gives 14-ft. picture; slides and effects, bargains; illustrated list post free, 2d.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

WANTED.

A Chemist's Lamp, cheap; not a square one.—Write, "Chemist," 38, Hylton Road, Millfield, Sunderland.

Recent Editions of 'Attfield,' 'Muter,' and Ganot's 'Physics'; also lantern (3 or 4-wick), with condenser and objective. Particulars and lowest cash price to—C., 1, Blackburn Road, Bolton.

NORTH OF ENGLAND SCHOOL OF CHEMISTRY AND PHARMACY.—The third annual "smoker," arranged by the "passed" and present students of the above School was held in the Crown Hotel, Clayton Street West, on Thursday evening, November 5, Mr. Fred. E. Schofield, of Morpeth, Local Secretary of the Pharmaceutical Society, and Ex-Mayor of the Borough, presided over a company numbering fully a hundred. Proceedings were opened by a limelight exhibition, by Mr. W. J. Clarke, of Stockton, one of the students. The slides were most artistic, and most of them the work of the exhibitor. Harmony was soon in full swing, and was kept going merrily by Messrs. Blacklock (violin), Etherington (banjo), J. Gibson, jun., Harper, Hedley, Hoffman, Laurie, MacFarlane, Park, Watson, Wright, and others. Mr. Marshall again ably presided at the piano. The Chairman filled his position most admirably, and the entertainment was voted by all to be quite the best of several enjoyable evenings which have been promoted by the students.

PERSONAL NOTES.

MR. ALFRED HIGGS, chemist and druggist, has been appointed a Justice of the Peace for the borough of Kingston-on-Thames.

MR AND MRS. G. S. V. WILLS will give a "Cinderella" in the King's Hall, Holborn Restaurant, London, on Friday, December 4, at 9 p.m., to celebrate the twenty-first birthday of their daughter Georgina.

MR. JAMES ANDERSON, F.R.P.S., of Messrs. Anderson and Co., wholesale manufacturing chemists, Edinburgh, has been elected an assistant of the Edinburgh Merchant Company, in virtue of which office he becomes a Governor of George Watson's Hospital and Colleges, Daniel Stewart's Hospital and College, James Gillespie's Hospital and Schools, also trustee of the late Mr. George Grindlay, and Governor of the late Mr. Watherston's endowment.

MR. DAVID SMITH has purchased the business of Mr. David Archibald, chemist and druggist, 67, High Street, Linlithgow.

MR. STEPHEN PATERSON, of Aberdeen, whose death is announced this week, was the head of the old-established firm of William Paterson and Sons, wholesale druggists. He served his apprenticeship with Duncan, Flockhart and Co., of Edinburgh. Mr. Paterson married a daughter of the late Hon. John Paterson, Prime Minister at the Cape of Good Hope.

MR. JOHN BROWN, President of the Edinburgh Pharmacy Athletic Club, has left the wholesale department of Messrs. Duncan, Flockhart and Co., to succeed Mr. Thomas S. Bogie, chemist and druggist, Market Place, Melrose.

MR. JOHN HERBERT WILSON, pharmaceutical chemist, has been unanimously elected Mayor of Harrogate.

MR. R. A. ROBINSON, 195, Brompton Road, S.W., has been elected on the London County Council without a contest.

MR. JOHN HARRISON, chemist and druggist, of Sunderland, has been elected Chairman of the Local Health Committee, of which he was previously Vice-Chairman.

MR. JAMES CHAMBERS, who has completed fifty years' service in the employ of Mr. H. Silverlock, printer, Blackfriars Road, had the jubilee of his long service celebrated by a concert given in his honour at Ye Hampton Court Palace on Tuesday, November 10, when a framed testimonial and purse of money were presented to him.

MR. G. C. DRUCE, M.A., has been elected Sheriff of Oxford, and on Monday, November 9, gave a "Wine" in the Examination Schools to the officials and members of the Corporation, the city magistrates, and a few personal friends. Mr. Druce has also been appointed pursuivant of the Provincial Grand Lodge of Oxfordshire.

MEISTER, LUCIUS, and BRÜNING have removed their London offices to 46, St. Mary Axe, E.C.

DIARY OF THE WEEK.

Secretaries of Societies are requested to send notices of forthcoming meetings not later than Wednesday in the previous week.

SATURDAY, NOVEMBER 21.

PHARMACEUTICAL FOOTBALL CLUB *v.* St. Michael's United, at Wormwood Scrubbs. Kick-off at 3 p.m.

MONDAY, NOVEMBER 23.

ROYAL GEOGRAPHICAL SOCIETY, at 8.30 p.m.
"Two Years in Uganda, Unyoro, and the Upper Nile Region," by Lieutenant Seymour Vandeleur.

TUESDAY, NOVEMBER 24.

CHEMISTS' AERATED AND MINERAL WATERS ASSOCIATION, LIMITED, at 3 p.m.
Annual Meeting at Anderton's Hotel, Fleet Street, E.C.

MIDLAND PHARMACEUTICAL ASSOCIATION, at 8.30 p.m.
Meeting of the Trade at the Grand Hotel, Birmingham.

ROYAL PHOTOGRAPHIC SOCIETY, at 8 p.m.
"A Photographic Museum," by R. Child Bayley

WEDNESDAY, NOVEMBER 25.

BRIGHTON JUNIOR ASSOCIATION OF PHARMACY, at 9 p.m.
Debate on "Counter Prescribing": Affirmative, A. T. Jeeves; negative, W. Howes.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION, at 9 p.m.
"Physiological Functions," by H. Jessop.

THURSDAY, NOVEMBER 26.

CHEMISTS' ASSISTANTS' ASSOCIATION, at 8.30 p.m.
"Palms and their Products," by John R. Jackson.

LIVERPOOL PHARMACEUTICAL STUDENTS' SOCIETY, at 8.30 p.m.
"The Romance of a Chymist's Shop," by Charles Sharp.

PHARMACEUTICAL CRICKET AND FOOTBALL CLUB, at 8 p.m.
Smoking Concert at the Holborn Restaurant.

PHARMACY DINNER AT EDINBURGH, at 6.30 p.m.
To be held at 36, York Place.

FRIDAY, NOVEMBER 27.

ABERDEEN JUNIOR CHEMISTS' ASSOCIATION.
Magazine Evening. Editor, N. Douglas.

PHARMACEUTICAL SOCIETY (EDINBURGH), at 8.30 p.m.
"Opening Statement," by J. Laidlaw Ewing, chairman.
"The Manufacture and Use of Compressed Gases," by T. Maben.

SATURDAY, NOVEMBER 28.

METROPOLITAN COLLEGE OF PHARMACY.
Annual Dinner at the Holborn Restaurant.

LINSEED MEAL is not a drug, according to the Irish Justices (Queen's Bench Division), who ruled that a drug is a substance which is principally used as a medicine, and that where the purchaser did not indicate what he required a prosecution could not succeed.

Chapters in Prehistoric Pharmacy.

PILL-MAKING AND COATING IN PRE-GLACIAL TIMES.

By Satiricus.

CONTINUED investigation of the now famous Old Sandstone rocks in the vicinity of Ilkley has led to the disclosure of other records of man's early activity. These are more or less obliterated, but have yet proved capable of restoration, and as a result we obtain evidence of the fact that as man became intellectually more advanced than during the tablet age, he degenerated somewhat as an animal. The proof thus afforded that the Law of Compensation was at work in the mysterious dawn of humanity's little day is at once beautiful and striking. How solemn the thought that then, as now, action and reaction were met in every part of Nature, as Emerson has it, "in darkness and light; in heat and cold; in the ebb and flow of waters; in male and female; in the inspiration and expiration of plants and animals," so that "an inevitable dualism" bisected Nature, each thing being a moiety and suggesting another thing to make it whole.

Additions to one part were necessarily accompanied by subtractions from the other, and *vice versâ*. In fact, just as the ebb and flow of the sea must balance, a certain compensation balanced every gift and every defect, and whatever was gained in one direction was of necessity lost in another. In the sketch now before us evidence of the all-pervading nature of this eternal compensatory principle is afforded by the fact that whilst primeval man appears to have gained enormously in organising capacity, since the tablet age previously described, he had most decidedly deteriorated as an animal, through having acquired the evil habit of making and taking pills!

The lapse of time since the manufacture of compressed tablets was inaugurated must have been enormous, but the date on which the first batch of pills was made—for the first batch must have been made some time—is extremely uncertain, and even more difficult of determination than that which saw the invention of concentrated animal foods. Something in minus millions of a certainty, for it was in pre-glacial times, but the exact day of the month must be left for future investigators to discover. The question before us now is how did pills originate? And the answer is—through fermentation!

How this came to pass is soon told. Whilst the progenitors of our race had no reason to take any thought for the morrow, their increasing progeny soon felt the desirability of accumulating stores of food. Application of the compression theory rendered the old hand to mouth system obsolete, and a system of barter soon sprang into existence through the constant exchanging of different kinds of tablets by those who preferred a varied diet. This, indeed, was the origin of hoarded wealth.

But lo! the ever-watchful Nemesis came upon the scene, and the over-stocking of highly hygroscopic tablets was followed by slow decomposition which, though rendering the compressed foods more digestible, was accompanied by the formation of poisonous products that induced dyspepsia and all the other evils that flesh has since been heir to. The faculty of voluntarily disgorging the stomach contents was by this time a rarity and, inheriting the tendency to the evils provoked by their fathers, the children in the fourth and fifth and every subsequent generation suffered likewise. The need of other than homœopathic medicines thus became manifested, and the inventive genius of man was not slow to produce what was required from herbs and minerals, through reasoning by analogy from the action of pre-glacial dogs, cats, and other animals in eating grass, etc., when suffering from "that tired feeling."

In times when a thousand years was but as one day, it was not long before continual revolving of the compression theory led to the preparation of dried herbs in a globular form, and thenceforward progress was easy and rapid. The illustration represents the earliest pill-factory of which any records exist. The skin clothing here observed upon the human forms indicates a much later stage of development than during the tablet age. The employment of a highly-trained staff, too, is evidence of the power already exercised by man over the rest of creation. The kneading, piping, rolling, and coating of pills are all clearly exemplified, and the antics of the animals in the background seem to indicate that these were the subjects of physiological experiments which enabled the early pill manufacturer, who is seen proudly erect rolling pills with a giant scallop shell (probably that of *Pecten islandicus*), to send out his special products with a strict guarantee as to their efficacy.

But we must conclude by paying our tribute to the genius and enterprise of the original pill-roller, whose advertisement has survived the wreck of countless civilisations, to be repeated in the representative journal of his craft to-day.

Pill-Rolling and Coating in Pre-Glacial Times.

From an Old Sandstone poster, discovered on a face of rock covered by detritus.

Descriptive Trade Index.

An Alphabetical List of Advertisers in the 'Pharmaceutical Journal,' designed as a convenient guide for buyers, giving a brief account of the nature of the business done and particulars of the chief specialties in each case.

For Classified List of goods offered by Advertisers see pages at end of this Index.

READERS SHOULD MENTION THE 'PHARMACEUTICAL JOURNAL' WHEN CORRESPONDING WITH ADVERTISERS.

ALLEN AND HANBURYS, LTD., are wholesale and export druggists, manufacturers of all PHARMACEUTICAL PRODUCTS, and sole agents for the antitoxins prepared by the British Institute of Preventive Medicine. Their SPECIAL MANUFACTURES are:—COD-LIVER OIL, specially refined; CASTOR OIL, free from odour and all flavour of castor oil; MALT EXTRACT of very superior flavour and high digestive power; LIQUID MALT EXTRACT; MALT EXTRACT WITH COD-LIVER OIL, an intimate combination free from taste of cod-liver oil; TABELLÆ or COMPRESSED DRUGS, in great variety; CAPSULES of flexible gelatin of all the more important drugs as BLAUD'S PILL, GUAIACOL, SANDAL OIL, etc.; PILLS — gelatin, sugar, and "pearl" coated. JUJUBES and PASTILLES of all kinds manufactured by patent process. MEDICATED THROAT PASTILLES; LOZENGES: According to the British Pharmacopœia, Throat Hospital, and numerous private formulæ; MEDICAL AND TOILET SOAPS. Proprietary articles manufactured by ALLEN AND HANBURYS are "THE PERFECTED" COD-LIVER OIL, prepared by a special and distinct process, whereby all unpleasant qualities are eliminated; MALT EXTRACT and combinations with cod-liver oil (Bynol), and hypophosphites (Byno-hypophosphites). BYNIN AMARA corresponds to Easton's syrup; BYNIN EMULSION is a perfect combination of cod-liver oil and the hypophosphites of lime and soda with liquid malt and cream. BYNO CASCADA is a reliable preparation of cascara sagrada at once palatable and active. BYNO PANCREATIN contains the digestive ferments of the pancreatic juice in very active condition, and is especially adapted for preparing peptonised foods. INFANTS' FOODS: A series of foods adapted to the increasing physiological requirements of the infant, known as "FIRST FOOD" (No. 1), "SECOND FOOD" (No. 2), and "MALTED FOOD" (No. 3). The Offices, Laboratories, and Warehouse of the firm are at BETHNAL GREEN, LONDON, E. The Surgical Instrument Manufactory, WEYMOUTH STREET, W. Cod-Liver Oil Manufactories, LOFODEN, LONGVA, and KJERSTAD. Australian Depôt, 484, COLLINS STREET, MELBOURNE. Telegraphic address: "ALLENBURYS LONDON." Telephone, No. 1172.

ALLSOP (ARTHUR) is a maker of SURGICIAL ELASTIC STOCKINGS, KNEECAPS, LADIES' ACCOUCHEMENT BELTS, GENTLEMEN'S RIDING BELTS, LEGGINGS, SOCKS, WRISTLETS, etc. The stockings can be had in either WOOL, SILK, or THREAD. Special instructions for measurement are sent on application to the maker at DUFFIELD, DERBYSHIRE. Telegrams: "ALLSOP DUFFIELD."

ANDERSON AND CO. are manufacturing chemists, wholesale and export druggists. Address: JUNCTION BRIDGE WORKS, EDINBURGH. Telegrams: "MERCURY EDINBURGH." Telephone, No. 4116.

APOLLINARIS COMPANY, LIMITED (THE), are the sole importers of Apollinaris, Apenta, and Friedrichshall natural mineral waters. APOLLINARIS, "THE QUEEN OF TABLE WATERS," is a natural effervescent and agreeable beverage, which has been placed by the Académie de Médecine of France at the head of all the natural mineral waters examined for absolute purity and freedom from disease germs. It is bottled only at the Apollinaris Brunnen in the valley of the Ahr, Rhenish Prussia. APENTA is a Hungarian natural aperient water, constant in composition, and possessing the much esteemed excess of the sulphate of magnesia over the sulphate of soda, and unique in its content of lithium, which renders it so useful in gouty

Apollinaris

cases. Its quality is guaranteed by the fact that it is bottled under the absolute control of the Royal Hungarian Chemical Institute (Ministry of Agriculture), Buda Pest, at the Springs, Buda Pest, Hungary. FRIEDRICHSHALL is a tonic aperient water from Saxe Meiningen, Germany. This old-established aperient water is of great value in the treatment of habitual constipation. A new spring has recently been opened, the water of which has been found in practice to be in every respect equal to that which for the last fifty years has been a favourite aperient with the medical profession on the Continent of Europe and throughout the civilised world. 4, STRATFORD PLACE, OXFORD STREET, LONDON, W. Telegrams: "APOLLINARIS LONDON."

ASSOCIATION FOR THE SUPPLY OF PURE VACCINE LYMPH (THE). Established 1877. Sole agents for DR. WARLOMONT'S CALF VACCINE, supplied in tubes and half tubes; also POMADE for export. Every antiseptic precaution carefully observed. HUMAN VACCINE from healthy children also supplied. Edward Darke, Secretary. Address: 12, PALL MALL EAST, LONDON, S.W. Telegrams: "DARQUE LONDON."

ATLAS CHEMICAL COMPANY (THE) makes a variety of goods, such as OXIDES, ENAMEL, UNDERGLAZE and MAJOLICA COLOURS, STRONG STAINS, FIREPROOF CEMENT, OILS, COLOURS for INK and SOAP MAKING, DYES (textile), etc., etc. The firm also publishes 'CHEMICAL RECIPES,' which has already reached a third edition. The headquarters are at SUNDERLAND, ENGLAND, with agencies in BIRMINGHAM and CHICAGO. Telegrams: "CHEMICALS SUNDERLAND."

BARCLAY AND SONS, LIMITED, have been established upwards of a century and do a large trade in DRUGGISTS' SUNDRIES, PHOTOGRAPHIC REQUISITES, PROPRIETARY MEDICINES, DISINFECTANTS, PERFUMERY and TOILET REQUISITES, CIGARS, CIGARETTES, LOZENGES, MINERAL WATERS, ABDOMINAL BELTS AND BANDAGES, ABLUTONIC FLESH GLOVES, BABIES' MOUTH SPONGES, FEEDING BOTTLES, TEETHING TEATS, COMFORTERS, etc., BOUGIES, ENEMAS, THERMOMETERS, BRONCHITIS KETTLES, ASTHMA REMEDIES, ANTISEPTIC GAUZES, AIR CUSHIONS, BEDS, etc., BED PANS, BATH MATS, STRAPS, ETC., BOTTLES of all kinds, CAPSULES, CHAMPAGNE TAPS, CHEST PROTECTORS, COMPOUND SULPHUR TABLETS, COMPRESSED

PELLETS. CONSTANT CURRENT BATTERIES, GLYCERIN JELLY, etc., HAYES' SANITARY RIDING PADS, HYPODERMIC SYRINGES, PLASTERS, MEASURES, PILLS, RESPIRATORS, SACHETS and numerous other MISCELLANEOUS ARTICLES. The address is 95, FARRINGDON STREET, LONDON, E.C. Telegrams: "YALCRAB LONDON." Telephone, No. 6717.

BARKER (F.) AND SON manufacture BARKER'S SHAVING PAPER, which they claim supersedes the use of a strop. It has over fifty years' reputation, and is quoted in the catalogues of most wholesale houses. Address: FINSBURY PARK, LONDON, N.

BAUGHAN AND CO. are SHOW-CASE MAKERS and SHOP FITTERS. Illustrated price-list of SHOP FITTINGS and STALL PLATES of the latest designs, free on application. Address, WALTHAMSTOW, LONDON. Telegrams: "BAUGHAN LONDON."

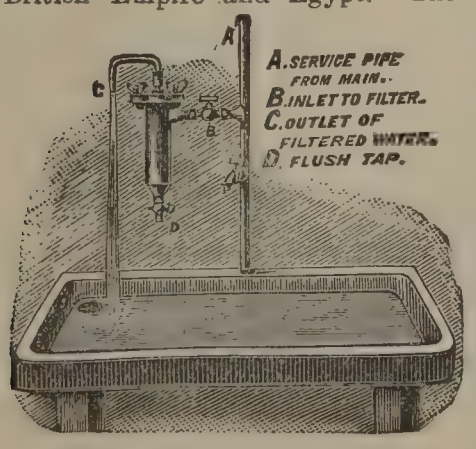
BEANES (E.) AND CO. are manufacturers of DIASTASED FARINA FOOD, put up in tins. The address is FALCON WORKS, HACKNEY WICK, LONDON.

BED SUPPORT COMPANY (THE) manufactures THE BED SUPPORT, which prevents patients from slipping down in bed and relieves nurses from frequent raising and lifting. Testimonials, prices, etc., may be had on applying at THE BUTTS, COVENTRY.

BEECHAM (THOMAS), proprietor of BEECHAM'S PILLS, said to have the largest sale of any patent medicine in the world, and BEECHAM'S TOOTH PASTE. Chemists can have a great variety of advertising matter on application. All parcels are delivered per rail, carriage paid to destination. Address: ST. HELENS, LANCASHIRE. Telegrams: "BEECHAM'S PILLS ST. HELENS."

BENGER (F. B.) AND CO., LTD., are manufacturing chemists. They make a specialty of FOOD PREPARATIONS, among which are BENGER'S FOOD for infants and invalids, BENGER'S PEPTONISED BEEF JELLY, PEPTONISED CHICKEN JELLY and PEPTONISING POWDERS, LIQUOR PANCREATICUS (Benger), LIQUOR PEPTICUS (Benger), PEPSINE (Benger), CONCENTRATED ESSENCE OF RENNET, LIQUOR THYROIDIN (Benger), BENGER'S EXTRACT OF RED MARROW, etc. This is probably the only firm engaged solely in utilising the natural digestive and other ferments of the animal organism in the preparation of foods and medicines, not an atom of any such ferments being used which they have not themselves extracted from the secreting glands. Their preparations are known all over the world and may be obtained through all wholesale houses and shippers, or of the manufacturers at OTTER WORKS, MANCHESTER. Telegraphic address: "BENGERS MANCHESTER."

BERKEFELD FILTER CO., LTD. (THE), is the sole maker and licencee of the patent BERKEFELD FILTER for the British Empire and Egypt. The distinctive character of these



FILTERS is in the FILTERING MEDIUM, which consists of KIESELGUHR (the highly-porous silicious skeletons of diatoms) formed into HOLLOW CYLINDERS of various sizes. The FILTERING CYLINDERS lend themselves to a variety of applications, such as ordinary DRIP-FILTERS, SYPHON, PUMP and HIGH-PRESSURE FILTERS. The advantages claimed for these filters are:—They are GERM-PROOF, and give an abundant supply of STERILE WATER; are simple in construction, and can be easily and effectively cleaned and sterilised. The Company's address is 121, OXFORD STREET, LONDON. Telegrams, "TUBIPORES LONDON." Telephone, No. 3994.

BERKLEY (JOHN) manufactures all kinds of INDIARUBBER STAMPS, LEVER EMBOSSING PRESSES, COPYING PRESSES, SEALS, NUMERATORS, PUNCHES, BRANDS, BRASS DOOR AND WINDOW PLATES, BRASS CHECKS and LABELS, etc., etc. He is also a DIE SINKER, STENCIL CUTTER, ENGRAVER, etc., and is prepared to supply chemists with STAMPS and DESIGNS for business purposes. In fact, there are no kind of rubber stamps or type that the firm are not able to send out on the shortest notice. Address: 8, LIVERY STREET, BIRMINGHAM. Works, 11, LIVERY STREET and BARWICK STREET.

BILTOR CO. (THE) makes what is claimed to be the least troublesome, coolest, and most hygienic tobacco pipe yet invented. The smoke must pass through the material of the cartridge (a species of filtering paper), and the pipe has received awards wherever exhibited, at Chicago, Bordeaux, Sheffield, and Hull. Wholesale prices sent on application to 93, OXFORD STREET, LONDON, W.

BLONDEAU ET CIE. are manufacturers of SOAPS, PERFUMERY, and other articles for the toilet. Amongst their specialties are the celebrated "VINOLIA SOAPS," comprising the "PREMIER," "VESTAL," "TOILET-OTTO," "FLORAL," "BABY"; also MEDICATED SOAPS. Another series consists of the BLONDEAU FAVOURITE PERFUME SOAPS, amongst which are "CUCUMBER AND GLYCERIN," "COLD CREAM," "MARÉCHAL NIEL," "OPOPONAX," "HELIOTROPE," and many others, all of which are supplied in boxes containing three tablets, the box for such soap having a different design printed in colours. The soaps consist of "Vinolia" soap bases, and are perfumed with various popular and delicate scents. VINOLIA PERFUMES comprise nearly forty different kinds, and are supplied in bottles of various sizes, retailing from 6*d.* to 9*s.*, and also in bulk. LYPSYL (an emollient for the lips) and VINOLIA SHAVING SOAPS, put up in a variety of forms and sticks; VINOLIA CREAM PASTILLES, COSMETICS, BRILLIANTINE, DENTIFRICE (powder and liquid), SACHETS, POMADE, etc., etc. Particulars of the special arrangement for the exportation of perfumes in bond may be had on application. Messrs. Blondeau contract with some of the largest American liners for the supply of TOILET SOAPS for the use of passengers. The firm's travellers visit every part of the globe. Address, MALDEN CRESCENT, LONDON, N.W. Telegraphic and cable address, "BLONDEAU LONDON."

BOORD AND SON are distillers, foreign wine and spirit merchants, and methylators. They supply the FINEST ORANGE WINE for preparing orange quinine wine. Quotations for RECTIFIED SPIRIT, METHYLATED SPIRIT, AND FINISH on application at ALLHALLOWS' LANE, or BARTHOLOMEW CLOSE, LONDON, E.C.

BOVRIL (LIMITED), food specialists, prepared the well-known meat extract "BOVRIL." This is prepared from PRIME OX BEEF, and in addition to the stimulating properties of the meat extract, contains the actual nourishment of the beef itself. INVALID BOVRIL is specially prepared for use in the sick room. It is put up in porcelain jars and sold by CHEMISTS AND DRUGGISTS only. This preparation differs from ordinary Bovril in being more concentrated and quite devoid of seasoning. The head offices are in FARRINGDON STREET, LONDON, E.C. Branches at MANCHESTER, LIVERPOOL, BIRMINGHAM, NEWCASTLE, HULL, LEEDS, EDINBURGH, GLASGOW, DUBLIN, and BRUSSELS. Telegraphic address, "FLUID LONDON."

BOWERS BROTHERS are chemists' printers and advertisement designers. They are noted for NOVEL DESIGNS, GOOD WORK, and LOW PRICES. ESTIMATES sent free on application to the printing offices, BLACKFRIARS ROAD, LONDON, S.E.

BRADLEY AND BOURDAS, pharmaceutical chemists, are proprietors of the ALBATUM or WHITE ROUGE, for cleaning gold and silver plate, etc.; also of the AMERICAN CHERRY PECTORAL for COLDS, COUGHS, ETC. The address of the firm is 48, BELGRAVE ROAD and 6, PONT STREET, LONDON, S.W., and telegraphic address, "BOURDAS LONDON."

BRAMWELL (E.) AND SON manufacture HYPOSULPHITE of SODA, SULPHITE of SODA, EPSOM SALTS, GLAUBER SALTS, ALUM, "DETERGENT" (for bottle washing, and for softening water), PRECIPITATED CHALK, etc. The address of the firm is ST. HELENS, LANCASHIRE. Telegrams: "BRAMWELL ST. HELENS."

BRAND AND COMPANY are manufacturers of CONCENTRATED BEEF TEA, MEAT ESSENCES, etc. Numerous GOLD MEDALS have been awarded for the company's specialties, which include ESSENCES OF BEEF, MUTTON, VEAL and CHICKEN, MEAT JUICE, DIGESTIVE MEAT BISCUITS, TURTLE SOUP and JELLY, BEEF TEA JELLY, INVALID SOUPS of all descriptions, SAVOURY MEAT LOZENGES, EXTRACTUM CARNIS, BEEF BOUILLON, CALF'S FOOT JELLY, PEPTONE PREPARATIONS, ENTRÉES, POTTED MEATS, PRESERVED PROVISIONS, PIES, PORTABLE SOUPS, and SAUCES, among the last named being BRAND'S celebrated "INTERNATIONAL A1 SAUCE." The firm has a large wholesale trade, both at home and abroad. Address: 74 to 84, SOUTH LAMBETH ROAD, VAUXHALL, S.W. Telegrams: "BRAND'S ESSENCE LONDON."

Brand & Compy

BRECKNELL, TURNER, AND SONS, LIMITED, are the makers and sole proprietors of BRECKNELL'S SKIN SOAP (Prize Medal), which they claim to be the sweetest and most wholesome unscented soap in existence. The late Sir Erasmus Wilson and other leading dermatologists have recommended it. The address of the firm is BEE-HIVE, 31 and 32, HAYMARKET, LONDON.

BRITISH CHEMICAL CO., LIMITED (THE) are manufacturers of PURE IODIDES OF POTASSIUM and SODIUM, RESUBLIMED IODINE., etc. The office is at 149, ST. VINCENT STREET, GLASGOW. Works: WHITECROOK, CLYDEBANK. London Agents: W. V. ROBINSON AND CO., MARKET BUILDINGS, MINCING LANE, E.C.

BROWNING (A. J.) is a manufacturer of ARTIFICIAL TEETH for the dental profession, and has had large experience in MECHANICAL DENTISTRY for over twenty years. Charges for single teeth or complete sets on application to HAINTON VILLAS, HAINTON SQUARE, GRIMSBY.

BULLOCK (J. L.) AND CO. are pharmaceutical and manufacturing chemists, and the proprietors of BULLOCK'S PEPSINA PORCI, and ACID GLYCERIN OF PEPSINE. In the latter preparation advantage has been taken of the solubility of PEPSINE in GLYCERIN to produce a convenient and desirable liquid form of this valuable medicine, which will keep for any length of time. The firm's address is 3, HANOVER STREET, HANOVER SQUARE, LONDON, W.

BURGOYNE, BURBIDGES AND CO. are manufacturing and pharmaceutical chemists, wholesale and export druggists, importers and distillers of essential oils, contractors to H.M. Government, and have been established over 150 years. They are manufacturers of PURE CHEMICALS and all PHARMACEUTICAL PRODUCTS for PHARMACY, PHOTOGRAPHY and TECHNICAL PURPOSES, EFFERVESCENT and GRANULAR PREPARATIONS, FRUIT and SOLUBLE ESSENCES, TINCTURES and SPIRITUOUS PREPARATIONS in bond, CONCENTRATED LIQUORS, SOLID and LIQUID EXTRACTS, etc., and supply ESSENTIAL OILS of the B.P., OLEA ANETHI, ANTHEMIDIS, CARUI, CARYOPHYLLI, CINNAMOMI, COPAIBÆ, CYMINI, CUBEBÆ JUNIPERI, MENTHÆ PIPERITÆ, MYRISTICÆ, PIMENTÆ, SANTALI FLAVI. DIRECT IMPORTERS of OLEUM BERGAMOTÆ, ANISI, CASSIÆ, EUCALYPTI GLOBULI, LAVANDULÆ, PATCHOULI, LIMONIS pure, NEROLI, AURANTII, ROSMARINI, ORIGANI, etc. SPECIALTIES: CHLOROBROM (Burgoyne's), the new hypnotic; OLEUM SANTALI FLAVI COMP. SOLUBILIS ACID SALICYLIC and SALTS (Von Heyden); GUAIACOL CARBONATE, CREOSOTAL, AMMONOL, VANILLINE XTALS, HELIOTROPINE and IONONE (De Laire and Co.'s perfumery agents); KAHLBAUM'S PURE ORGANIC CHEMICALS for ANALYTICAL RESEARCH. CHEMICAL, PHYSICAL, and PHOTOGRAPHIC APPARATUS are stocked, also SURGICAL INSTRUMENTS and HOSPITAL APPLIANCES of every description, and DRUGGISTS' SUNDRIES. Special quotations and terms to large buyers and for export. Prices current in various languages on application. Laboratories and warehouse, 12, COLEMAN STREET. Offices, 16, COLEMAN STREET LONDON, E.C. Telegrams: "CYRIAX LONDON." Telephone, No. 255.

BURROUGH (JAMES) is a distiller who makes a specialty of supplying SPIRITS OF WINE, METHYLATED SPIRIT and FINISH, ORANGE WINE. MALAGA, SHERRY, and PORT for medicinal purposes. Prices on application to CALE STREET DISTILLERY, LONDON, S.W. Telegrams: "BURROCALE, LONDON."

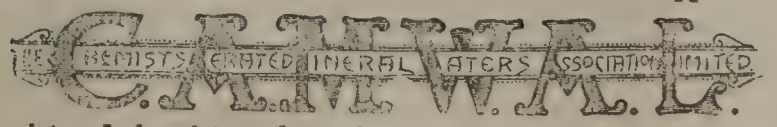
BURROUGHS, WELLCOME AND CO. are manufacturers of pharmaceutical preparations of various kinds. They also pay special attention to the development of research in the Wellcome Research Laboratories under the direction of Dr. Frederick Power, and to the investigation of recently introduced therapeutic agents. Prominent amongst the products of Burroughs, Wellcome and Co. are the KEPLER MALT EXTRACT, the KEPLER SOLUTION OF COD-LIVER OIL AND MALT. TABLOIDS of all kinds, including BLAUD PILL, CASCARA SAGRADA, SODA MINT, CHLORATE OF POTASH, and, amongst the more recent comers, COMPOUND CAFFEINE TABLOIDS, a combination of caffeine citrate with antipyrin, largely used in the treatment of headache when the addition of a cardiac tonic to antipyrin is considered advisable; EUCAINE HYDROCHLORIDE TABLOIDS are now under trial as a non-poisonous substitute for cocaine; TRIONAL and TETRONAL "TABLOIDS" and PICROTOXIN HYPODERMIC "TABLOIDS," possessing a stimulating action on the respiratory tract, and used in the night sweats of phthisis. ANIMAL SUBSTANCES are prepared in the same form, including THYROID GLAND, THYMUS GLAND, SPINAL CORD, LYMPHATIC GLAND, BONE-MARROW, SUPRARENAL GLAND, SALIVARY GLAND, and similar agents under trial in the treatment of disease. These animal substance "tabloids" contain the whole substance of the organs the names of which they bear, and are claimed to retain all the active principles. Compressed drugs intended for use in making antiseptic and other solutions are distinguished as SOLOIDS and compressed into a distinctive shape, quite different from tabloids intended for administration *per os*. Of THERAPEUTIC SERUMS, BURROUGHS, WELLCOME AND CO. now issue the following in both liquid and dry forms:—ANTIDIPHTHERITIC, ANTISTREPTOCOCCIC, ANTITETANIC, ANTITYPHOID, and ANTISYPHILITIC. The method of preparing these serums in the dry scale form is one of the many results of research undertaken in the B. W. and Co. laboratories. The address of this firm is SNOW HILL BUILDINGS, LONDON, E.C. Telegraphic and cable address: "BURCOME LONDON." Telephone, No. 6601.

BURROW (W. AND J.) supply the Alpha brand Malvern waters, which are bottled specially for export. They include NATURAL MALVERN (still), SPARKLING MALVERN, "MALVERNIA," SODA, POTASH, LITHIA, SELTZER, VICHY, LEMONADE, GINGER ALE, etc.; also THIRST QUENCHERS for all climates. Address: THE SPRINGS, MALVERN.

CADBURY BROTHERS occupy a leading position as manufacturers of COCOA, CACAO BUTTER CHOCOLATE and all its numerous combinations. Their "COCOA ESSENCE" is guaranteed to be absolutely pure, and therefore claimed to be the best preparation of cocoa on the market. CADBURY'S MEXICAN CHOCOLATE is equally pure, consisting solely of the finest cocoa and sugar, slightly flavoured with vanilla. CHOCOLATE CAKES, CHOCOLATE BISCUITS, and CHOCOLATE CREAMS in all varieties, as manufactured by this firm, possess extreme delicacy of flavour and are accordingly in great demand. The firm's MANUFACTORY is at BOURNVILLE, KING'S NORTON, the LONDON OFFICES at 2, ROOD LANE, E.C., and the PARIS DEPÔT at 90, FAUBOURG ST. HONORÉ. Telegrams: "CADBURY BIRMINGHAM (or LONDON)."

CHEMISTS' AERATED AND MINERAL WATER ASSOCIATION, LIMITED (THE), is well known all over Great Britain, leading chemists in every district being interested in this highly successful co-operative concern, which thrives excellently well under the guidance of the genial Secretary, Mr. H. T. BUTLER,

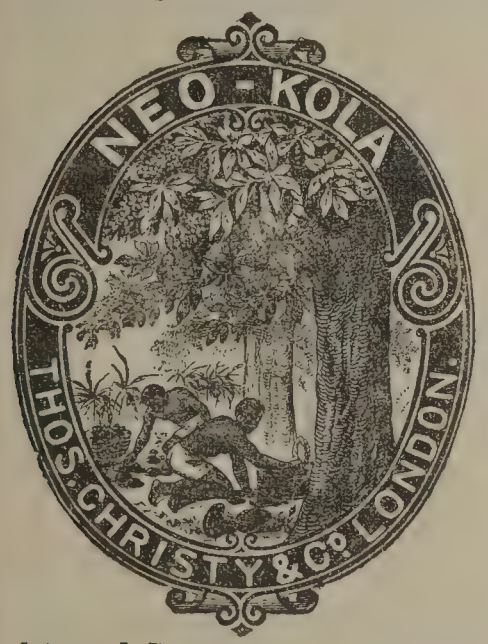
and the Managers, Messrs. R. R. GROOME and F. G. PIRIE. The CAMWAL products are confined to AËRATED WATERS of every description, for ordinary or medicinal use, and in syphons or bottles, together with flavouring syrups of all kinds. Supplied only



to registered chemists and hospitals, the trade yet increases at such a pace that continual expansion of premises and extension of manufacturing and storing facilities are necessitated. The headquarters of CAMWAL are in London, at 45, GIFFORD STREET, CALEDONIAN ROAD, N, whilst there are branches at Harrogate, Bristol, and Mitcham, and factories are being erected at Birmingham and Manchester. Telegrams: "RUBINE LONDON" "CAMWAL BRISTOL," "CHEMISTS STARBECK," or "CAMWAL MITCHAM."

CHESEBROUGH MANUFACTURING CO. are the proprietors and sole makers of "VASELINE." Among their special preparations are VASELINE (blue seal), VASELINE CAMPHOR ICE, COSMETIQUE and TOILET SOAPS (unscented or perfumed), etc. Their most recent production is CAPSICUM VASELINE. The address is 42, HOLBORN VIADUCT, LONDON, E.C., and at NEW YORK, BERLIN, PARIS and MONTREAL. Telegrams: "VASELINE LONDON."

CHRISTY (THOMAS) AND CO. are wholesale druggists' importers and dealers in all PHARMACEUTICAL SPECIALTIES. Among their leading lines are PETROLEUM JELLY, SUGAR OF MILK, ADEPS LANÆ in seven or eight different qualities, AMERICAN and CONTINENTAL CRUDE DRUGS, etc., etc. Many "NEW REMEDIES," such as COCA, CHAULMUGRA OIL, MENTHOL, KOLA, STROPHANTHUS, PICHI, SUCCUS PAPAW, THE "MORSTADT" CACHET MACHINES, CACHETS, etc., have been introduced and largely owe their present popularity to the energetic pushing of this firm. CACHETS are now used to such an extent that the firm makes a particular point of meeting the special requirements of all buyers. With this object some twenty different sizes of the necessary apparatus are stocked each in itself complete, and CHRISTY AND CO claim to be the only makers of a kola preparation (NEO KOLA) direct from the fresh undried nuts. 25, LIME STREET, LONDON, E.C., is their address. Telegrams: "CHRISTYFEN LONDON." Telephone, No. 4247.



CONDY AND MITCHELL, LIMITED, are the sole makers of the well-known CONDY'S FLUID, CONDY'S POWDER, CONDY'S OZONIZED WATER, etc., etc., the merits of which have led to the award of Eleven International Exhibition Prize Medals. The address of the firm is 67 and 68, TURNMILL STREET, LONDON, E.C.

COOPER AND CO. (MESSRS.), manufacturing chemists, are well known as the introducers of the CACHETS "FINOT," the great feature of these being coloured inscriptions. Cachets are becoming an absolute necessity to the dispensing counter, and are also especially adapted for headache, neuralgia, and other powders. The CACHETS can be had either PLAIN, WHITE, or DELICATELY COLOURED, with the chemist's name and address, or contents, printed in any desired colour. The colours in general use are PALE or DARK ROSE, CARMINE, GARNET, SKY BLUE, PALE SALMON, BLACK, etc. COOPER AND CO'S SINAPINE TISSUE (mustard leaflets) are a most cleanly and convenient form of MUSTARD POULTICE, and may be had in either packets or tins. Their LIQUOR QUININÆ SALICYLATES is also well known as a valuable pharmaceutical product in the treatment of rheumatism, gout, etc. SAMPLES OF CACHETS are sent free on application to 80, GLOUCESTER ROAD, SOUTH KENSINGTON, S.W. The laboratories are at 8 and 9, STATION BUILDINGS, GLOUCESTER ROAD, LONDON. Telegrams: "SINAPINE LONDON."

CORNEILLE, DAVID AND CO. are sole agents for the United Kingdom and Colonies for the sale of GÉRAUDEL'S PASTILLES, prepared from Norwegian pine tar, a remedy for COUGHS, COLDS, BRONCHITIS, SORE THROAT, etc. Dealers are requested to write for show cards, handbills, etc. These pastilles have just been added to the list of protected articles of the Proprietary Articles Trade Association. Address: 9, FENCHURCH AVENUE, LONDON, E.C. Telegrams: "CORNEILLE LONDON."

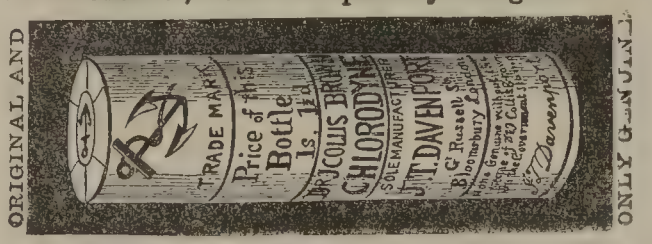
COW (P. B.) AND CO. are the makers of COW'S RINGS and WASHERS for every description of INTERNAL and EXTERNAL STOPPERED BOTTLES (plain or lettered). They are the original manufacturers of INDIARUBBER RINGS for patent stoppers for aërated waters, and for many years supplied the late Mr. HIRAM CODD and his agents exclusively. Address, 46 and 47, CHEAPSIDE, LONDON, E.C. Works, STREATHAM COMMON, S.W. Telegrams: "PETER COW LONDON."

COWAN (WILLIAM) is the inventor and maker of the VACCINATION SHIELD. Address, 48 and 50, DUNDAS STREET, GLASGOW.

COX (ARTHUR H.) AND CO., manufacturing chemists, claim to be the original makers of TASTELESS PILLS. The firm has been established at Brighton some 60 years, and is the only one in Great Britain which makes nothing whatever but PILLS for the medical and pharmaceutical professions, both at home and in the Colonies. The management of the factory and the manufacture of the COATING is entrusted to the members of the Cox family only. The address of the firm is ST. MARTIN'S PLACE, BRIGHTON. Telegrams, "COX BRIGHTON."

CUTHBERT (RALPH) is the maker of a pure white PETROLEUM EMULSION. The address is WESTGATE, HUDDERSFIELD.

DAVENPORT (J. T.) is a manufacturing and pharmaceutical chemist, his chief specialty being CHLORODYNE, which was originally made and used by DR. COLLIS BROWNE, of the Indian Army. This preparation enjoys a universal reputation, and may be obtained at the PHARMACY, 33, GREAT RUSSELL STREET, BLOOMSBURY, LONDON, W.C.



DENNIS (JOHN W.), manufacturing chemist, the proprietor of DENNIS'S "LINCOLNSHIRE" PIG POWDERS, for all diseases of pigs, such as swine fever, coughs, fits, hoose, retention of urine, tender feet, inflammation, milk fever, etc. He also prepares "CARROTINE" for butter colouring, which gives no trouble, is always ready for use, and does not colour the butter-milk. These preparations can be obtained from all LONDON and PROVINCIAL PATENT MEDICINE HOUSES, or orders may be addressed to J. W. DENNIS, CHEMIST, LOUTH. Telegrams: "DENNIS CHEMIST LOUTH."

DICKER (CHARLES) is the maker of the AUTOMATIC DISTILLING AND EXTRACTING APPARATUS (Patent Dicker), which is specially adapted for chemists, laboratories, etc., and is made in various sizes. There is no COOLING SNAKE in the apparatus, which works AUTOMATICALLY. The apparatus is made at BRUSSELS (Belgium); London agents, BUTLER JONES AND CO., 11, LEADENHALL STREET, E.C.

DIETERICH (EUGEN) is a chemical manufacturer who makes a specialty of modern therapeutic agents, amongst the most recent of which are FERROMANGAN-SACCHARATE (Dieterich), and FERROMANGAN-PEPTONATE (Dieterich), recommended by Professor Dr. Escherich, Graz, LORETIN, etc., etc. The factory is at HELFENBERG, near DRESDEN, but samples and testimonials can be had without any charge from the head depôt for the United Kingdom: M. BUCHNER, 149, HOUNDSDITCH, LONDON, E.C.

DINNEFORD AND CO. are manufacturers of HORSE-HAIR FLESH GLOVES, BELTS, BATH BRUSHES, etc. Among their specialties are GENT'S and LADY'S FLESH GLOVES (in pairs) for dry use only. The ladies' quality are made with light hair and soft pile. The gents' being made with black or grey hair and pile of various degrees of hardness. Their FLESH STRAPS and BATH STRAPS are specially useful for rubbing the back, spine, and shoulders, and are adapted for wet or dry use. The ALEXANDRA BATH BRUSH, hair on both sides, on a long handle, is a most convenient article for the bath, as is also the PRINCE OF WALES' BATH GLOVE and the ARMY BATH PAD. The OXFORD WASHING PAD readily cleanses and softens the hands, and is a most useful article. The firm is also the sole manufacturer of "DINNEFORD'S MAGNESIA." Address: 180, NEW BOND STREET, LONDON, W.

DUNCAN, FLOCKHART AND CO. are wholesale export druggists, also manufacturers of CHLOROFORM, PHARMACEUTICAL PREPARATIONS, and AËRATED WATERS. The principal items in their export trade are:—CHLOROFORM, S.G. 1·490, containing about 1 per cent. absolute alcohol, and practically non-decomposable. There are three grades, viz., from pure alcohol, from methylated spirit, and from acetone. For home trade s.g. 1·497 is usually supplied. CAPSULES AND PERLES: Blaud pill capsules, cascara, Easton, etc., 1000 varieties; BAUMOL SUPERFATTED SOAP for medical, nursery, and toilet use; SYRUP. HYPOPHOS. CO (Duncan), FLUID EXTRACTS, CONCENTRATED and COMPOUND LIQUORS, PREPARATIONS of ANIMAL GLANDS, especially THYROID and ORCHITIC TABLETS, ANTISEPTIC DUSTING POWDER and ANTISEPTIC DERMOLIA CREAM, all varieties of COMPRESSED TABLETS, HYPODERMIC TABLETS, PEARL-COATED PILLS, HEARTBURN TABLETS, GUTTA PERCHA TOOTH STOPPING, SULPHUR PASTILLES. The firm's address is 104 and 106, SOUTH CANONGATE, EDINBURGH. Telegrams: "DUNHART EDINBURGH." Telephone, No. 874. LONDON BRANCH, 38, SNOW HILL, E.C. Telegrams: "DUNHART LONDON." Telephone, No. 65,282.

ELBERFELD FARBENFABRIKEN CO., LTD., are manufacturing chemists and the makers of BAYER'S SPECIALTIES, THYROIODIN, TRIONAL, TETRONAL, TANNIGEN, PHENACETINE (Bayer), PIPERAZINE (Bayer), EUROPHEN, SOMATOSE SALOPHEN, ANALGEN, LOSOPHAN, SULFONAL (Bayer), SALOL, LYCETOL, ARISTOL, etc. Quotations and all desired information on application to the wholesale depot, 19, ST. DUNSTAN'S HILL, LONDON, E.C.

ELEPHANT CHEMICAL CO. (THE) manufactures DISINFECTANTS CARBOLIC POWDER and FLUID, NAPHTHALENE TABLETS, CARBOLIC TOOTH POWDER, OIL, and CHLORIDE OF LIME. Address, NEATE STREET, CAMBERWELL, LONDON, S.E.

ELLIMAN, SONS, AND CO. are the proprietors and manufacturers of ELLIMAN'S ROYAL EMBROCATION, for horses and cattle, also ELLIMAN'S UNIVERSAL EMBROCATION, for human use for rheumatism, lumbago, sprains, bruises, chest colds, sore throat from cold, stiffness, etc. A special feature of ELLIMAN'S EMBROCATIONS is that they contain no alcohol or poison of any kind. The business is now the sole property of the surviving son of the late founder. The trade marks of the firm are "ROYAL" and "UNIVERSAL." Address, SLOUGH, ENGLAND. Telegrams: "ELLIMAN SLOUGH." A B C code used.

EPPS (JAMES) AND CO., LIMITED, are homœopathic chemists. Revised price list sent on application to 48, THREADNEEDLE STREET, LONDON, E.C.

EVANS, GADD AND CO. do a general DRUG BUSINESS, and keep a large stock of PATENT MEDICINES, DRUGGISTS' SUNDRIES, etc.; they are also manufacturers of GALENICALS, and give special attention to the preparation of attractive SPECIALTIES for COUNTER TRADE. A few of their leading lines are GRANULAR EFFERVESCENT PREPARATIONS, SELECT PERFUMERY, CRUSHED LINSEED, CHEMICAL FOOD, EXONIA BRAND of MALT PREPARATIONS, CHEMISTS' PROPRIETARIES, etc., etc. The address of the firm, which was established over 100 years ago, is 97, 98, 99, and 100, FORE STREET, EXETER. Telegraphic address: "GADD EXETER."

EVANS, LESCHER, AND WEBB are wholesale and export druggists, manufacturing chemists, dealers in DRUGGISTS' SUNDRIES, etc. A few of their specialties are SAVARESSE'S CAPSULES, these are not made of GELATIN but of MEMBRANE, SAVAR'S CUBEB CIGARETTES, CASCARA-HAWLEY for constipation, SAVAR'S COCA WINE, EVANS' FLUID EXTRACTS, LESCHER'S 'RECENT MATERIA MEDICA,' fourth edition, etc. For other preparations and articles supplied by this firm see Evans, Son and Co., Liverpool. The address of the firm is 60, BARTHOLOMEW CLOSE, London. Telegrams: "LESCHER LONDON."

EVANS, SONS, AND CO. are wholesale and export druggists, manufacturing chemists, distillers of ESSENTIAL OILS, DRUG GRINDERS dealers in DRUGGISTS' SUNDRIES, sole consignees of the "MONTSERRAT" LIME FRUIT JUICE; also dealers in PATENT MEDICINES, PROPRIETARY ARTICLES, SURGICAL INSTRUMENTS, PHOTOGRAPHIC REQUISITES and CHEMICALS, SHOP FIXTURES and FITTINGS, SHOW CASES, etc. The following are some of their specialties:—CHLORODYNE, CITRATE OF MAGNESIA, CONCENTRATED INFUSIONS, DECOCTIONS and WATERS, EXTRACTS, FLUID EXTRACTS, FOSSILINE, FROTHINE, FRUIT ESSENCES, GRANULAR PREPARATIONS, INSECT POWDER, LIQ. SANTAL FLAV. CO., LIQ. COPAIBÆ CO., CASTOR, COD-LIVER, and OLIVE OILS, OINTMENTS, OLEATES, PEARL-COATED PILLS, PODOPHYLLIN RESIN, POWDERED DRUGS, EFFERVESCING SALINE, SAL VOLATILE, SCAMMONY RESIN, SOLUBLE ESSENCES OF GINGER, SPIRIT OF NITRE, TINCTURES, etc., etc. The address of the firm is 56, HANOVER STREET, LIVERPOOL, and it is connected with EVANS, LESCHER AND WEBB, LONDON, and EVANS AND SONS, LIMITED, MONTREAL, who have branches at Toronto, Victoria, and Boston, U.S.A. Telegrams: "BASILIO LIVERPOOL." Telephone, No. 558.

FENTIMAN AND CO. are dentists and workers in MECHANICAL DENTISTRY for the profession, in GOLD, DENTAL ALLOY, VULCANITE, TUBES, CELLULOID, GUM SECTION, etc. Repairs also receive special attention. Address: 2, UPPER EAST SMITHFIELD, LONDON.

FINK (FREDERICK) AND CO. are importers and wholesale drug dealers. Their specialties include GLYCERIN, GUM ARABIC of all descriptions, DEXTRINE, GUM TRAGACANTH, PURE BEESWAX, CERESINE WAX, and HONEY. Address: 10 and 11, MINCING LANE, LONDON, E.C. Telegrams: "FINKLEIN LONDON."

FIRST SWISS ALPINE MILK EXPORTING CO. The specialty of this firm is the UNSWEETENED CONDENSED MILK, recommended as an infants' food, being pure Alpine cow's milk condensed to a quarter of its bulk, then hermetically sealed, sterilised, and conserved without the aid of sugar or any preservative. Address: ROMANSHORN, SWITZERLAND. London offices: 3, LAURENCE POUNTNEY HILL, E.C.

FITCH AND NOTTINGHAM have been established nearly half a century, and have for that period confined themselves to the SELECTION, BREEDING, and SALE of LEECHES for use in PHARMACY. They are particularly noted for their "HAMBRO SPECKLED" and "OFFICINAL GREEN" specimens. They supply all the leading wholesale houses and institutions in the United Kingdom, in addition to doing a large export business. Their address is 4, CANONBURY SQUARE, LONDON, N.

FLETCHER BROS. AND CO. are manufacturing chemists, and makers of SHEEP DIPPING FLUID, POWDER and PASTE for killing all parasites, curing skin diseases in sheep, cattle, horses, dogs, etc., and preventing the outbreak and spread of contagious diseases; also PATENT FIRST PRIZE SHEEP-DIPPING MACHINES, WEED KILLER, and FLY POWDER.. A specialty of the firm is "PINO-PHENOL PURIFIER," a concentrated soluble fluid disinfectant of special purity and strength for general use. It is a powerful antiseptic, and has a pleasant odour. This preparation has been shipped in large quantities to India in consequence of the plague, FLETCHER BROS. AND CO. being contractors to the British and Indian Governments. Letters should be addressed to the firm at GRIMSBY. Telegrams: "FLETCHER BROTHERS GRIMSBY."

FORD, SHAPLAND AND CO. are chemists' and general printers lithographers, engravers, etc. They do a large business in all kinds of PRINTING and STATIONERY required by chemists, such as as PRICE LISTS. PAMPHLETS, CIRCULARS, BILLHEADS, MEMORANDUMS. CARDS. COUNTER BILLS (pictorial and ordinary), POSTERS, FOLDING CARDBOARD BOXES for putting up specialties, and LABELS of every description; PRESCRIPTION BOOKS, LEDGERS, and ACCOUNT BOOKS, DEMY and other WRAPPING PAPERS. SEALING WAX. TWINE, etc. They also manufacture STICKY and CHEMICAL FLY-PAPERS; CABINET PAPERS in boxes and packets, etc. They are also agents for REGISTRATION OF TRADE MARKS. Address: 6, GREAT TURNSTILE, HIGH HOLBORN, LONDON, W.C.

FOSTER (MICHAEL E.) is an importer and wholesale dealer in AMERICAN BAY RUM. To shippers and others requiring it in BOND SPECIAL QUOTATIONS are forwarded on application to 50, BISHOPSGATE WITHIN, LONDON, E.C.

FOULKES AND CO. are operative chemists (established 1839). Their specialties are:—FOULKES' CEMENT FOR BROKEN ARTICLES, FOULKES' TOILET AND NURSERY POWDER, FOULKES' PHILODERMA OR GLYCERIN SHAVING PASTE, FOULKES' MARKING INK. Address: 19 and 21, GRANGE MOUNT, BIRKENHEAD.

FULLWOOD (R. J.) AND BLAND are manufacturers of ANNATTO and RENNET. Their specialties are FLUID EXTRACT

of ANNATTO for colouring cheese and butter, CHEESE RENNET EXTRACT, guaranteed to be a pure extract from the Stomach Rennet of New-Born Calves, and not to contain anything artificial; they also make a new Butter Colouring, "OLEO-BUTTER COLORINE," which is purely vegetable, and prepared with oil. The address is 31, BEVENDEN STREET, HOXTON, LONDON. Telegrams: "FULLWOOD HOXTON LONDON."

GEORGE (J.E.) is a pharmaceutical chemist and the proprietor of GEORGE'S PILL and GRAVEL PILLS. Address: HIRWAIN, GLAMORGAN.

GIBBS (D. AND W.), LIMITED, are manufacturers of all kinds of HARD, SOFT, and TOILET SOAPS, and of DOUBLE DISTILLED CHEMICALLY PURE GLYCERIN. They are contractors to H.M. Government, the India and Colonial Offices, etc., etc. A description of their works will be found in the *Pharmaceutical Journal* of November 21, 1896. SUPER-FATTED COLD CREAM and MEDICATED SOAPS are amongst their SPECIALTIES. The firm was established in 1712. The works, which are situated at Wapping, cover an acre and a half of ground, while an equal area adjoining them is devoted to storage and stabling. The offices are at 16, FINSBURY CIRCUS, LONDON, E.C. Telegrams: "PAOS LONDON."

TRADE D G W MARK.

GILES, SCHACHT AND CO. are manufacturing druggists, the original preparation, LIQUOR BISMUTHI SCHACHT, having been invented and introduced by Mr. G. F. Schacht. Among other preparations they make SYR CINCHONÆ ALCOHOLIC PEPSINA LIQUIDA, PEPSINA LIQ C. BISMUTHO, PEPSINA LIQ C. EUONYMIN, LIQ BISMUTHI SEDATIVUS LIQ. PODOPHYLLI C. BISMUTHO, LIQ CASCARÆ DULCIS, BI DIGESTIVE MALT AND PEPSIN FLUIDS, and INFALLIBLE ESSENCE OF RENNET. The address is CLIFTON, BRISTOL.

GOODALL, BACKHOUSE, AND CO. are wholesale and export druggists, DRUG AND SPICE GRINDERS, DRYSALTERS, OIL AND COLOURMEN, PATENT AND PROPRIETARY MEDICINE DEALERS, DRUGGISTS', GROCERS', AND ITALIAN WAREHOUSEMEN'S SUNDRIES, TIN CANISTER AND CARDBOARD BOX makers, importers of OLIVE OILS, ESSENCE OF LEMON, etc. Price list of DRUGS and other articles sent free on application. The headquarters are at 7 to 15, WHITEHORSE STREET, SOVEREIGN STREET, and VICTORIA ROAD, LEEDS. London address: 54, SOUTHWARK STREET, S.E. Telegrams, "RELISH LEEDS." Telephone, No. 954.

GOULD (E.) AND SON are homœopathic pharmacists, their business being chiefly the furnishing of HOMŒOPATHIC PHARMACEUTICAL PREPARATIONS of the highest order. Their specialties are TRITURATION TABLETS, each containing one grain of any trituration, and "DICULES," each containing one minim of any attenuation. MEDICINE CHESTS and CASES, SURGICAL APPLIANCES of all kinds, and numerous HOMŒOPATHIC PUBLICATIONS are also supplied. The address of this firm is 59, MOORGATE STREET, CITY, LONDON, E.C. Telegrams: "CALENDULA LONDON."

GREEFF (R. W.) AND CO. are agents for the therapeutic serums and other preparations of the SOCIÉTÉ CHIMIQUE DES USINES DU RHÔNE and the TRILLAT SYSTEM OF DISINFECTION (see also p. cx.). Address, 3, EASTCHEAP, LONDON, E.C.

GREGORY AND CO. are the makers of VESICO SUDORIFIC, a well-known veterinary remedy. The address of the firm is TEMPLE BRISTOL.

GUEST AND CO. are makers of MEDICATED LOZENGES and JUJUBES, B.P. I.H. PH. and GENERAL PROPRIETARY LOZENGES, GUM JUJUBES and PASTILLES, GRANULAR PREPARATIONS, BOILED SUGARS, FLORAL TABLETS. Address: CITY WORKS, CARRUTHERS STREET, MANCHESTER. Telegrams: "GUESTO MANCHESTER." Telephone, 235.

HARKER (C. R.), STAGG AND MORGAN are wholesale and export druggists, manufacturing chemists, importers and distillers of ESSENTIAL OILS. The extensive steam laboratories of this old-established firm are principally devoted to the manufacture of all kinds of high-class pharmaceutical preparations, both official and non-official. Special excellence is claimed for their EMULSIONS of COD-LIVER OIL and PETROLEUM, EASTON'S SYRUP, SYRUP of the HYPOPHOSPHITES, CHEMICAL LIQUORS, LIQUID EXTRACTS by repercolation, LIQUOR PAPAIN ET IRIDIN CO., LIQ. EUONYMIN ET PAPAIN, LIQ. CAULOPHYLLIN ET PULSATILLÆ. LIQ. SANTAL CO., MISCIBLE LIQUID EXTRACTS, LIQUID ANNATTO, etc., The importation and distillation of ESSENTIAL OILS form an important branch of the business, the firm of HARKER STAGG and MORGAN being well known as special dealers in OTTO OF ROSE, MUSK, VANILLA, TONQUIN, the OILS of PEPPERMINT and LEMON, FRUIT ESSENCES, and harmless colours for confectionery. The firm's address is 15, LAURENCE POUNTNEY LANE, and ARTHUR STREET, WEST, LONDON, E.C. Telegraphic address: "EDULCINE LONDON." Telephone, No. 1949.

TRADE MARK.

HARRINGTON BROTHERS are manufacturers of FINE CHEMICALS for RESEARCH, LABORATORY, and EDUCATIONAL PURPOSES, PHOTOGRAPHIC CHEMICALS of the highest purity, TECHNICAL CHEMICALS for manufacturers, MAGNESIA CARBONATE and CALCINED. Manufactory:—CORK. LONDON Warehouse and Offices, OLIVER'S YARD, 53A, CITY ROAD, E.C. Telegrams, "SICCATIVE LONDON."

HARVEY (S.) is the sole proprietor of Dr. MACKENZIE'S ARSENICAL SOAP and WAFERS. These preparations have achieved a great success, seeing they have only been on the market a few years, and this success is attributed to the HIGH QUALITY of the special INGREDIENTS contained in the SOAP which, it is claimed, while perfectly harmless, cures spots, pimples, freckles, and eczema, and will produce a lovely complexion. It is shipped to all parts of the world, and has a large sale in SOUTH AFRICA and AUSTRALIA, and is especially recommended for eczema and other cutaneous affections. The factory is at WAPPING, the business address being 5, DENMAN STREET, LONDON BRIDGE, LONDON, S.E.

HAWKSLEY (T.) is a surgical instrument maker and proprietor of HAWKSLEY'S PATENT MILK STERILISERS for HUMANISING and PEPTONISING INFANTS' FOOD. Descriptive pamphlet free by post. Address: 359, OXFORD STREET, LONDON, W.

HAYMAN (ALFRED) AND CO. are the sole proprietors and makers of HAYMAN'S BALSAM of HOREHOUND, recommended for coughs, colds, hoarseness, influenza, asthma, consumption, hooping cough, bronchitis, and all disorders of the chest and lungs. Address, 15, ALBEMARLE STREET, LONDON, E.C.

HAYWOOD (J. H.) is a manufacturer of SURGICAL ELASTIC STOCKINGS with and without seams, BELTS, SUSPENSORY BANDAGES, TRUSSES, SURGICAL APPLICANCES, CAOUTCHOUC ARTICLES, etc. He has patented an IMPROVEMENT in TRUSSES, the patent is for PADS composed of felt or any other soft material moulded to any shape, so that there are no seams to irritate or chafe the skin. Departmental lists of BANDAGES, BRACES, CHAMOIS LEATHER ARTICLES, DRUGGISTS' SUNDRIES, etc., will be forwarded post free on application to CASTLE GATE, NOTTINGHAM. Telegrams: "APPLIANCE NOTTINGHAM."

HEARON, SQUIRE, AND FRANCIS are wholesale druggists, analytical and manufacturing chemists, makers of liquid, solid and powdered EXTRACTS according to the B.P., B.P.C., and U.S.P., GRANULAR SALTS, CONCENTRATED LIQUORS for SYRUPS, CONCENTRATED WATERS, ROLLED PILLS, uncoated, pearl, or gelatin-coated, semi-solid EXTRACT OF MALT, liquid. INFANTS' FOOD MALTED, in bulk, COCA WINE, non-excisable, in pint and half-pint bottles, and every class of PHARMACEUTICAL GALENICALS. SPECIALTY: EVAPORATION OF PHARMACEUTICAL LIQUORS *in vacuo*. The firm's address is 38, SOUTHWARK STREET, LONDON, S.E. Telegrams: "FRANCIS LONDON."

HENRY (THOMAS AND WILLIAM) manufacture the widely-known "HENRY'S CALCINED MAGNESIA," originally made by them in 1772, and still prepared with scrupulous care and in the greatest chemical purity. Works, 11, EAST STREET, ST. PETER'S, MANCHESTER, NEW YORK: MESSRS. SCHIEFFELIN AND CO., WILLIAM STREET. PARIS: MESSRS. ROBERTS AND CO., 5, RUE DE LA PAIX. Registered trade mark, "HENRY'S CALCINED MAGNESIA."

HEWLETT AND SON (C. J.), are old-established (1832) wholesale and export druggists whose names are inseparably connected with some typical pharmaceutical preparations. For over twenty years their specialties have been freely endorsed and largely prescribed by the medical profession, and are to be found in the leading pharmacies, not only in the United Kingdom, but all over the world. For many years the firm has done an extensive export trade with India, China, and the Colonies, and it was one of the earliest to take advantage of the concessions regarding the allowance of drawback on exportation of spirituous medicinal compounds. They now annually export many thousands of gallons of TINCTURES to every quarter of the globe. More recently they have turned their attention to PERFUMES, SOLUBLE and FLAVOURING ESSENCES, etc., and all the packed goods that chemists abroad find so profitable to have put up for them in England ready for sale over the counter. Messrs. HEWLETT AND SON are Contractors to Her Majesty's Government, Colonial Governments, India Office, and most of the leading hospitals and institutions, both at home and abroad. For many years the firm's premises were situated in Cree Church Lane, in the heart of the City, but are now in CHARLOTTE STREET, LONDON, E.C. Telegrams: "PEPSINE LONDON."

HICKISSON (J.) is the maker of the original "CRYSTAL PALACE, JOHN BOND'S GOLD MEDAL MARKING INK," for which FORTY-FOUR GOLD and other MEDALS have been awarded, besides DIPLOMAS, whilst the firm holds royal appointments, and also acts as purveyor to the Army, Navy, the Crown Agents for the Colonies, the Admiralty, his Excellency the Governor-General of South Australia, and Her Majesty's Agent-General for Natal. A special point is made of presenting to each purchaser of the marking ink, a neatly mounted RUBBER STAMP with name or monogram. Mr. HICKISSON also manufactures RUBBER STAMPS and STENCIL PLATES on a large scale. Full particulars and TRADE PRICES may be had on application to the Works, 75, SOUTHGATE ROAD, LONDON, N.

CRYSTAL PALACE.

HIME (DR.) supplies pure CALF VACCINE. The address is DR. HIME'S CALF VACINE INSTITUTION, BRADFORD, YORKSHIRE. Telegrams: "HIME BRADFORD."

HINTON (ERNEST) is an optician and preparer of microscopic objects. His specialties are PREPARATIONS for the MICROSCOPE, specialty PHYSIOLOGICAL and BOTANICAL SPECIMENS, suitable for MEDICAL or PHARMACEUTICAL STUDENTS. Address, 12, VORLEY ROAD, UPPER HOLLOWAY, LONDON, N.

HIRST, BROOKE AND HIRST, LTD., are wholesale druggists. They supply "SOL" COCA WINE, which is prepared with port wine; also ORANGE WINE of the finest quality. Samples and prices on application. Address: LEEDS. Telegrams: "HIRST LEEDS."

HOGG (R.) AND SON supply AËRATED LIME WATER which is sold in syphons and bottles, also HOGG'S LITHIA WATERS, prepared from the original formula of Sir A. B. Garrod. The address is 1, SOUTHWICK STREET, LONDON, W.

HOOPER, STRUVE AND CO. are proprietors of the Royal German Spa at Brighton, which is the oldest true seltzer water business in this country. The firm has old-established pharmacies in Grosvenor Street and Pall Mall, and manufactures INDIARUBBER WATER BEDS and OTHER REQUIREMENTS FOR INVALIDS. Another specialty is "CARNABYN," a nourishing meat and malt wine compound. Addresses: 55, GROSVENOR STREET, and 26, DAVIES STREET, W.; 7, PALL MALL EAST, LONDON, S.W.; also at BRIGHTON.

HORA AND CO. supply hand-weighed and perfectly-folded SEIDLITZ POWDERS, prepared according to the British Pharmacopœia from HOWARD'S SEIDLITZ POWDER and ENGLISH TARTARIC ACID. The address is 47, MINORIES, LONDON.

HOWARDS AND SONS are manufacturing chemists of world-wide fame. Amongst their specialties are:—ÆTHERS—PURE AND METHYLATED, ACETANILID, BENZOIC ACID, BROMINE PREPARATIONS, CITRIC ACID, BICARBONATE SODA, BISMUTH PREPARATIONS, BORAX, BORACIC ACID, CAFFEINE, COCAINE, CAMPHOR—"BELLS," "BLOCKS," AND "FLOWERS"—IODINE PREPARATIONS, MAGNESIA, MERCURIAL PREPARATIONS, ROCHELLE SALTS, SEIDLITZ POWDER, QUININE AND ITS SALTS, and SPIRIT PREPARATIONS (for home trade and shipment under drawback). The address is STRATFORD, NEAR LONDON, E. Telegrams: "CHEMICAL HOWARDS LONDON."

HOWLETT (S.) is a medical and general shop fitter, shop front builder and show case maker, whose business was established in 1830. EXPORT ORDERS are carefully packed and shipped, and SHOPS are FITTED by contract in town or country with every REQUISITE on the most improved principles. A number of dispensaries in connection with the London hospitals have been fitted by this firm as well as the fittings of the Pharmaceutical Society of Great Britain. PLANS and ESTIMATES are supplied on applying at 4, LINDLEY STREET, SIDNEY STREET, MILE END ROAD, LONDON, E. Telegrams: "PELLICLE LONDON."

ICKRINGILL'S PATENT HYGIENIC AND ELASTIC CLOTH SYNDICATE, LTD., manufactures a special CLOTH which forms a most perfect covering for the body. ABDOMINAL, BODY, and other SUPPORTING BELTS, LUMBAGO, SCIATICA, and ANTI-CHOLERA BELTS, ELASTIC STOCKINGS, KNEE-CAPS, CHEST AND LUNG PROTECTORS, UNDER VESTS, BANDAGES, and SURGICAL ELASTIC APPLIANCES of all kinds are made with this cloth. It can be washed with soap and hot water without impairing its elasticity or stability, and costs much less than the ordinary silk elastic appliances. The bandages do not smell like most rubber goods when used for a short time. The headquarters of the firm are at 35, DEVONSHIRE STREET, KEIGHLEY. Telegrams: "ICKRINGILL'S ELASTIC CLOTH KEIGHLEY."

IDRIS AND COMPANY (LIMITED) manufacture MINERAL WATERS on a very large scale. Although only some five and twenty years have elapsed since the firm was founded by MR. T. H. W. IDRIS, the business has since developed and extended at a marvellous rate. The IDRIS ROYAL MINERAL WATERS consist of SODA, POTASH, SELTZER, LITHIA, OLYMPIA, and QUININE TONIC WATERS, GINGER BEER and ALE, ORANGE CHAMPAGNE, HOP ALE, etc. Other specialties are the IDRIS LIME JUICE CORDIAL, PURE LIME JUICE, LIMETTA, FRUIT CORDIALS (twenty varieties), and PALATABLE LIME JUICE. The firm's address is CAMDEN TOWN, LONDON, and COLEMAN STREET, SOUTHAMPTON. Telegrams: "IDRIS CAMDEN TOWN."

INGRAM AND ROYLE (LIMITED) are importers and exporters of all NATURAL MINERAL WATERS, SALTS, and PASTILLES, also sole agents for ÆSCULAP, CARLSBAD, and VICHY (State Springs), wholesale agents for HUNYADI JANOS. Their wholesale price list and pamphlet on "NATURAL MINERAL WATERS: THEIR PROPERTIES AND USES," will be sent post free on application. The LONDON address is 52, FARRINGDON STREET, E.C. LIVERPOOL: 19, SOUTH JOHN STREET. Telegrams: "INGRAM ROYLE LONDON," or "CELESTINS LIVERPOOL." Telephone, No. 6570.

ISLINGTON GLASS BOTTLE COMPANY (THE) have been established as the makers of MEDICAL BOTTLES for upwards of fifty years. Their motto is to provide an article at once "GOOD AND CHEAP." They send quantities of six gross and upwards, assorted sizes or otherwise, carriage paid to any address in England. The address is 153, UPPER THAMES STREET, LONDON, E.C.

JACKSON (THOMAS) is a pharmaceutical and manufacturing chemist. Among his specialties are "H.R.H. PRINCE ALBERT'S CACHOUX AROMATISE," "BENZINE RECT," C. D. CEMENT, etc. The laboratory, STRANGEWAYS, MANCHESTER.

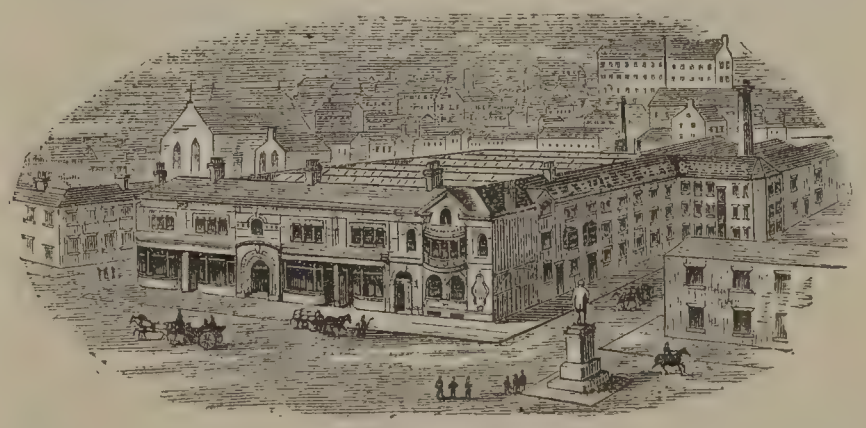
JAKSON (JOHN) AND CO. are manufacturing perfumers, makers of MITCHAM LAVENDER WATER, MITCHAM OILS, etc., prepared from Mitcham flowers. Terms on application to 17, PHILPOT LANE, LONDON, E.C.

JEWSBURY AND BROWN manufacture all kinds of MINERAL WATERS, put up in BOTTLES and SYPHONS, BREWED GINGER BEER in STONE BOTTLES, etc. They pay carriage on consignments and on returns. A list of prices is sent free to all chemists on application to the works, ARDWICK GREEN, MANCHESTER. Telegrams: "ORIENTAL AND DISPENSER MANCHESTER."

JOHNSON, MATTHEY AND CO., LIMITED, are manufacturers of SILVER NITRATE, GOLD CHLORIDE, CAUSTICS, CHEMICAL RE-AGENTS, LABORATORY, MINING and ASSAYING APPARATUS, refiners of GOLD, SILVER, and PLATINUM, assayers and metallurgical chemists, manufacturers of PLATINUM APPARATUS. Address, HATTON GARDEN, LONDON. Telegrams, "MATTHEY LONDON." ABC and A1 codes. Telephone, No. 6568.

JUDD AND MANNERS (successors to Crocker and Co.) are CHEMISTS' VALUERS, TRANSFER AGENTS, AND ACCOUNTANTS. Their address is 76, CANNON STREET, LONDON, E.C. Telegrams: "JUDD 76 CANNON STREET LONDON."

KAY BROTHERS (LIMITED), founded in 1786 and incorporated in 1887, are the manufacturers of numerous specialties, including KAY'S COMPOUND ESSENCE OF LINSEED ("LINSEED COMPOUND," trade mark); KAY'S TIC PILLS, "LINUM CATHARTICUM" PILLS, THROAT LOZENGES, SAPO LINI (linseed toilet soap); COAGULINE (a transparent cement); KLINX (a white cement); CUE CEMENT (for tipping billiard cues); LAVA (a fusible imperishable cement for iron and stone work); CHESHIRE BIRD-LIME (in bulk and in tins); STICKY FLY-PAPER MATERIALS; CARBOLIC DISINFECTING POWDER, all strengths, in bags, casks, and dredger boxes; SOLUBLE DISINFECTING FLUID, in bulk and bottles. The trade



will be supplied with show tablets, bills, specimens, etc. Special terms on application to the ST. PETERSGATE MILLS, STOCKPORT. Telegrams: "KAY STOCKPORT."

KEENE AND ASHWELL are manufacturing homœopathic chemists. "PERLOIDS" is the trade mark name under which they have introduced a new form for the administration of HOMŒOPATHIC MEDICINES, each Perloid containing one dose. The CAMPHOR PERLOIDS are claimed to be better and stronger than the Pilules, and just as strong as the Tincture. EUCALYPTUS PERLOIDS are also most convenient for administering the oil. PERLOIDS are put up in CHESTS and CASES of various sizes. SHOWCASES, AGENTS' COUNTER, or WALL CABINETS are supplied in great variety, a specialty being the "COMBINATION" AGENT'S SHOW CASE. TINCTURES and PILULES and other pharmaceutical galenicals are also prepared, and may be obtained from 74, NEW BOND STREET, LONDON, W. Telegrams: "KEENWELL LONDON."

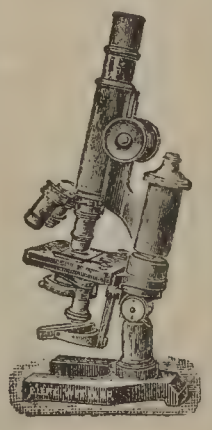
KEMP (W.) AND SON are manufacturing chemists, wholesale druggists, drug grinders and importers. In addition to the manufacture and sale of PHARMACEUTICAL PREPARATIONS, DRUGS and CHEMICALS, both for home and export trade, etc., a large trade is done in OPIUM, SAFFRON, COD-LIVER and OLIVE OILS, COPAIBA, SICILIAN ESSENCES and SULPHUR, ESSENTIAL OILS, HONEY, BEESWAX, GUMS, CONTINENTAL HERBS, PERFUMES, etc. A specialty of the firm is the production of PURE CRUSHED LINSEED and LINSEED MEAL. Address, HORNCASTLE. Telegrams: "KEMP DRUGGIST HORNCASTLE."

KIMPTON (RICHARD) supplies BOOKS on chemistry, pharmacy, medicine, and all kindred subjects. His address is 126, WARDOUR STREET, LONDON.

KÜHN (B.) is the sole consignee and sole licencee for the United Kingdom, British Colonies and Possessions, for a large number of important new therapeutic remedies. These include CHINOSOL, a powerful antiseptic; TANNALBIN, an intestinal astringent; DIURETIN (KNOLL), a diuretic; PAPAIN (FINKLER); COLCHICINE SALICYLATE CAPSULES; FERROPYRIN (KNOLL); EXALGINE (BRIGONNET); LOGAN'S THERAPEUTICAL PREPARATIONS (KNOLL), viz.:—THYRADÉN, HEPARADÉN, MEDULLADÉN, LIENADÉN, OSSAGÉN, ONARADÉN, PANCREADÉN, PROSTADÉN, RENADÉN, SUPRARENADÉN, TESTADÉN; ETHYL CHLORIDE (BENGUÉ), supplied in glass bulbs with curved and straight neck combined; and ANESTILE (BENGUÉ), a mixture of ethyl and methyl chlorides, supplied in nickel-plated copper cylinders. MR. KÜHN'S address is 36, ST. MARY-AT-HILL, LONDON. Telegrams: "CARMINES LONDON."

LAMBERT (W.) AND CO. are the sole preparers of DR. SCOTT'S BILIOUS and LIVER PILLS. These are put up in a GREEN BOTTLE, wrapped in GREEN PAPER, and can be procured from 173, SEYMOUR PLACE, LONDON, W.

LEITZ (E.) has, within quite recent years, taken a leading position as a manufacturer of MICROSCOPES and MICROSCOPICAL ACCESSORIES, and has also shown a remarkable faculty for meeting the requirements and fancies of English students. His ordinary MICROSCOPE STANDS compare favourably with those of English makers for lowness of price, convenience in use, and satisfactory finish, whilst those made for special purposes also deserve careful attention. MICROTOMES, CAMERA LUCIDAS, PHOTO-MICROGRAPHIC APPARATUS, MICROSPECTROSCOPES, and MICROMETERS, are amongst the accessories supplied by Leitz, but he is especially distinguished for his cheap and good OBJECTIVES, both ACHROMATIC and APOCHROMATIC. His address is OPTICAL WORKS, WETZLAR, GERMANY.



LEO AND CO are manufacturers of COMPRESSED CHLORATE of POTASH, CHLORATE of POTASH and BORAX, etc., etc. These are supplied by all the wholesale houses, or quotations will be given for large and small quantities on application to 8, CREECHURCH LANE, LONDON, E.C.

LIEBIG'S EXTRACT OF MEAT COMPANY, LIMITED (THE), make various preparations of MEAT EXTRACT, which enjoy a world-wide reputation. Their most recent specialty is PEPTONE OF BEEF for invalids, a highly nutritious, palatable, and easily digestible article. Samples are sent free to medical men on application. The address is 9, FENCHURCH AVENUE, LONDON, E.C. Telegrams: "LIEBIGS CO. LONDON."

LINCOLN AND MIDLAND COUNTIES' DRUG COMPANY (THE) are the sole proprietors and makers of the world-famed CLARKE'S BLOOD MIXTURE. It may be procured from all wholesale patent medicine houses or from the proprietors at LINCOLN. Telegrams: "LINDUM LINCOLN."

LINDSEY AND SONS are manufacturers of TRUSSES. Illustrated price list sent post free to any address on application to 32, LUDGATE HILL, LONDON.

LORIMER AND COMPANY are manufacturing chemists and wholesale druggists, importers, exporters, etc. They supply all kinds of chemists' COUNTER SPECIALTIES, drugs in bulk, etc. Among some of their new preparations are RENNET POWDER, ST. JOHN'S FIRST-AID LOTION and EMBROCATION, FLUID BEEF, EXTRACT OF MALT, PETROLEUM EMULSION, AMERICAN MILLED SOAPS, BEEF EXTRACT, COCA WINE, "LION COLOGNE" and A1 LIQUEUR. They are also agents for MILLER'S AMERICAN MILLED SOAPS. Chemists' SPECIALTIES are supplied with buyer's name only on labels, when so ordered. The firm's address is BRITANNIA ROW, ISLINGTON, LONDON, N. Telegrams: "CALISAYIN LONDON." Telephone, No. 7524.

MACDONALDS, LIMITED, do MECHANICAL WORK for the DENTAL PROFESSION and teach SURGICAL and MECHANICAL WORK to STUDENTS and IMPROVERS. DENTAL BUSINESSES and DENTAL MATERIALS are also bought and sold. The address is 29, PICCADILLY, MANCHESTER.

MACFARLAN (J. F.) AND CO. are manufacturing chemists, who make a specialty of ALKALOIDS and other FINE CHEMICALS. They are particularly noted for their OPIUM PRODUCTS, including MORPHINE and CODEINE, and their salts; also for their PURE CHLOROFORM, ANÆSTHETIC ETHER, CHRYSOPHANIC ACID, SALICIN, and BEBERINE SULPHATE, to single out a few items only. Of late years, too, they have come to the front as manufacturers of ANTISEPTIC DRESSINGS and APPLIANCES, as used in the Listerian System of Surgery. They were the first to prepare and sell these ANTISEPTIC SURGICAL DRESSINGS, having commenced the manufacture under the personal supervision of Prof. Sir Joseph Lister, F.R.S., etc. The headquarters of the firm are at 93 and 109, ABBEYHILL, EDINBURGH, and their London address is 9 and 11, MOOR LANE, FORE STREET, E.C. Telegrams—"MORPHIA EDINBURGH (or LONDON)."

MCKESSON AND ROBBINS are wholesale druggists and manufacturing chemists, and one of the oldest drug firms in America. As dealers in CRUDE DRUGS they occupy a prominent position, but in addition to the regular drug business the firm carries on a large trade in PATENT MEDICINES and DRUGGISTS' SUNDRIES. CORK CUTTING is also carried on, and they probably possess the largest stock of SPONGES in the United States. Besides their English trade they also have representatives in South America, Mexico, South Africa, Australia, and India, with each of which countries considerable business is transacted. The firm is best known in England for their GELATIN CAPSULED PILLS, in which line they were the pioneer house. These pills are manufactured so as to ensure absolute accuracy in dosage, a 5-grain quinine pill, for instance, containing within 1/50 grain of the specified amount of active ingredient. The coating of these pills will remain permanent in any climate. They make a special brand of hydrogen peroxide, termed PYROZONE, and also supply ETHEREAL SOLUTIONS containing 5 and 25 per cent. of pure H_2O_2 respectively. Among the other specialties of this firm are the beautiful preparation COMPOUND STEARATE OF ZINC, TARTARLITHINE, an ACID LITHIUM SALT, and OLEO STEARATE OF ZINC. The address is 91, FULTON STREET, NEW YORK, U.S.A. P. G. Box, 1860. Messrs. S. Maw, Son and Thompson, Aldersgate Street, London, E.C., are the British agents.

MARTINDALE (W.) is a manufacturing pharmaceutical chemist. Amongst his specialties are NITROGLYCERIN TABLETS, which are preferred to the alcoholic solution, being in accurately divided doses, and in a perfectly safe, stable, and portable form. If kept dry they will keep for years in any climate; NITRITE OF AMYL CAPSULES, encased in cottonwool and silk; IODIDE OF ETHYL, BROMIDE OF ETHYL, and CHLOROFORM CAPSULES. MARTINDALE'S EFFERVESCING PREPARATIONS include SULPHATE OF SODIUM, PHOSPHATE OF SODIUM, SODIO-MAGNESIAN APERIENT, PIPERAZINE, PIPERAZINE WITH PHENOCOLL, ANTIPYRINE, EXALGIN, CITRATE OF CAFFEINE, HYDROBROMATE OF CAFFEINE, and SALICYLATE OF LITHIUM, whilst special GRANULAR EFFERVESCENT PREPARATIONS are prepared according to recipe at short notice. MARTINDALE'S OZONIC INHALER and NASAL OZONIC INHALER are used for hay fever and influenza. CHLORATIFICE and SALICIFRICE are antiseptic tooth pastes. PURE ALKALOIDS and their SALTS, FINE CHEMICALS, and PREPARATIONS OF RARE DRUGS are also amongst the productions of this firm, the address of which is 10, NEW CAVENDISH STREET, LONDON, W. Telegrams: "MARTINDALE CHEMIST LONDON."

MATHER (WILLIAM), LTD., is the proprietor of the ROYAL BALSAMIC PLAISTERS, as supplied to the Army and Navy at Scutari Hospital. Chemists' own SPECIALTY PLAISTERS of every kind are made to order, also FLY-PAPERS, the firm being the oldest manufacturer of CHEMICAL FLY-PAPERS in the United Kingdom. The headquarters are in DYER STREET, HULME, MANCHESTER. The London agents are MESSRS. MACE AND HALDANE, 94, MILTON STREET, E.C. Telegrams: "MATHERS HULME MANCHESTER."

MAWSON FILTER CO. (THE) make filters of every conceivable shape, for all purposes, and the filtering medium employed has been very highly spoken of by distinguished chemists and bacteriologists. Address: 137A, PILGRIM STREET, NEWCASTLE-ON-TYNE. Telegrams: "WEDDELL NEWCASTLE-ON-TYNE."

MAW (S.), SON AND THOMPSON are SURGICAL INSTRUMENT makers and DRUGGISTS' SUNDRIESMEN. With the exception of drugs and chemicals, all that a chemist requires in the way of business, both for use and ornament, may be obtained from this firm. The entire FITTINGS of his shop, the GLASS CASES, SHOW CARBOYS, SCALES, WEIGHTS, MORTARS, MEASURES, PRESSES, BOTTLES, BOXES and every other IMPLEMENT and UTENSIL of the trade are provided; also LINT, DRESSINGS, PLAISTERS, PERFUMERY, PATENT MEDICINES, SPONGES, TOILET BOTTLES, BRUSHES, and FANCY GOODS of all kinds. SURGICAL INSTRUMENTS of every conceivable kind are manufactured by this firm, special attention being given to the ANTISEPTIC STERILISATION of instruments. The production of ARTIFICIAL LIMBS and the manufacture of SPINAL and other DEFORMITY APPARATUS, and BOOTS and SHOES for cripples are notable features of the firm, STERILISERS, SYRINGES, BRONCHITIS KETTLES, BEEF-TEA APPARATUS, PILL ROLLERS, and a variety of other goods are also supplied. The firm's address is 7 to 12, ALDERSGATE STREET, LONDON, E.C. Telegraphic Address: "ELEVEN LONDON."

MAYPOLE SOAP SYNDICATE, LTD. (THE), manufactures a most saleable novelty in the shape of "MAYPOLE SOAP," which, besides its cleansing properties, will dye SILKS, SATINS, COTTONS, FEATHERS, LACE GOODS, BLOUSES, CHILDREN'S FROCKS, GENTLEMEN'S SHIRTS, STOCKINGS, ANTIMACASSARS, TOILET MATS, SHAWLS, etc., etc. The firm claims that the dye will not wash out or fade, and does not dye the hands. The colours stocked are:—CREAM, HELIOTROPE, PINK, SALMON PINK, CANARY, MAUVE, ALOE, GREEN, LIGHT BLUE, FAWN, ORANGE, TERRA COTTA, and NUT BROWN. The address is 98, HIGH HOLBORN, LONDON, W.C.

MELIN (C.) is the maker of a new CAPSULING MACHINE which can be fixed to any counter and leaves no crease or pleat on the capsules. Address: 37, CRUTCHED FRIARS, LONDON, E.C.

MIDGLEY (CHARLES), LTD., prepares MEDICATED SOAPS and MEDICATED BATH POWDERS. The latter have been introduced as a cleanly, convenient and rapid method of preparing emollient and medicated baths for use in treatment of diseases of the skin. Address: 23, ST. ANN'S SQUARE, MANCHESTER.

MILLAR (A.) AND CO., LTD., supply PURE ORANGE WINE, prepared in accordance with the requirements of the British Pharmacopœia. Address: DUBLIN. Telegrams: "MILLAR DUBLIN."

MOORES, DE SAULLES AND CO. are manufacturers of MICROSCOPICAL COVER GLASSES AND SLIDES, and all kinds of PHOTOGRAPHIC GLASS GOODS. Price list sent on application. Address: WORDSLEY, near STOURBRIDGE.

MORSON (T.) AND SON manufacture PURE CHEMICALS of every description for medical, pharmaceutical, photographic analytical, and other use, ALKALOIDS, and all NEW REMEDIES, including the following specialties:—BISMUTH and its preparations; CHLOROFORM, pure and methylated; EXTRACTS, solid and liquid; IODINE and all preparations; HYPOPHOSPHITES, lime, soda, etc.; IRON, citrate and quinine, in scales, and all scale and other preparations of iron; LITHIA, carbonate and citrate; MERCURY and all preparations; POTASSIUM—bromide, citrate, cyanide, iodide; permanganate crystals, etc., etc.; VALERIANATES of ammonia, iron, soda, and zinc. MORSON'S CREOSOTE is prepared from wood tar. PEPSINE PREPARATIONS, CONCENTRATED FRUIT AND ARTIFICIAL ESSENCES FOR FLAVOURING, and GRANULAR EFFERVESCENT PREPARATIONS are also special lines with this firm. Offices and warehouse, 31, 33, and 124, SOUTHAMPTON ROW, RUSSELL SQUARE, W.C.; factory, SUMMERFIELD WORKS, HOMERTON, E., LONDON. Telegrams: "ACONITINE LONDON." Telephone, No. 2595.

MOSQUERA-JULIA FOOD CO., 21, NORTH AUDLEY STREET GROSVENOR SQUARE, LONDON, W. Chief Office, Detroit, Mich., U.S.A. Parke, Davis and Co., sole Agents (see also p. cviii).

MOSS (JOHN) AND CO. are manufacturing and pharmaceutical chemists, who are in a position to supply promptly on the best terms all CRUDE DRUGS, GALENICAL PREPARATIONS, FINE CHEMICALS used in pharmacy, the arts, and manufactures, and the rare and newest REMEDIES employed in medicine and surgery.

Among their more noticeable articles and specialties are PURGLYCERIN, COD-LIVER OIL, GALENICALS, CASCARA, EMULSIONS OF COD-LIVER OIL AND PETROLEUM, KIESELGUHR, BEEF JUICE, CAPSULES, of which they stock all the ordinary kinds and have introduced many entirely new forms and combinations. WATER WHITE OIL, free from odour and taste, for the preparation of POMADES, COLD CREAM, HAIR OILS, and TOILET ARTICLES. They also deal largely in CONCENTRATED WATERS and INFUSIONS, ESSENCES OF FRUIT, TINCTURES, LINIMENTS, etc., etc. The address is GALEN WORKS, WILSON STREET, NEW CROSS ROAD, LONDON, S.E. Telegrams, "GALENICALS LONDON."

MUMFORD (G. S.) supplies CRUSHED LINSEED, LINSEED (tea), STARCH POWDER, FULLER'S EARTH, PRECIPITATED CHALK, "WHITE EARTH," for toilet purposes, LIQUORICE JUICE, etc. Carriage is paid to railway stations within 200 miles of London (or allowance made for distances beyond) on a total weight of 112 lbs. and upwards of above-mentioned articles. The address is FARRINGDON ROAD, LONDON, E.C.

NEWBALL AND MASON are well known for their EXTRACT OF HERBS, GINGER EXTRACT, ESSENCE OF COFFEE, and WINE ESSENCES. The last-named are being specially pushed in view of approaching Christmas festivities. Address: NOTTINGHAM. Telegrams: "EXTRACT NOTTINGHAM." Telephone, No. 1532.

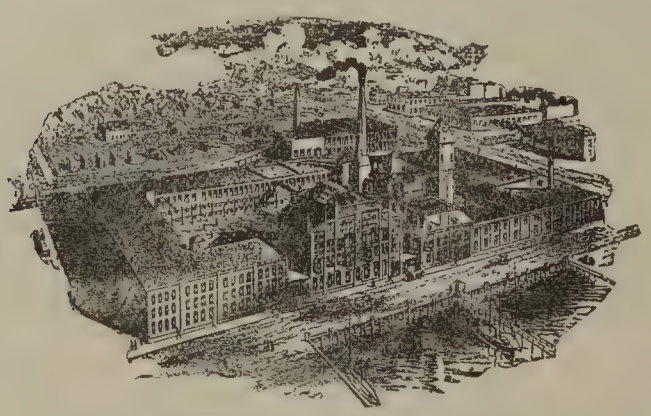
NEWBERY (F.) AND SONS are importers and exporters of BRITISH AND FOREIGN GOODS, DRUGGISTS' SUNDRIES, etc. They are the sole British agents for AYER'S MEDICINES, BROMO-SODA, CASCARINE LEPRINCE, "GREEN MOUNTAIN" ASTHMA CURE, INGLUVIN, LOZES FILTER PAPERS, TROMMER MALT EXTRACT, W. R. WARNER AND CO.'S PREPARATIONS, DR JAYNES REMEDIES, etc. Among other specialties are BERDOE'S PERFUMES, NEWBERY'S COAL TAR SOAP, "ST. PAUL'S" PERFUMES, VALENTINE'S MEAT JUICE, NERVE AND BRAIN SALT, etc., etc. The firm has been established over 150 years. The address is 1 and 3, KING EDWARD STREET, NEWGATE STREET, LONDON, E.C. Telegrams, "NEWBERY LONDON." Telephone, No. 6905.

NEWSHOLME (G. T. W.), pharmaceutical chemist, makes a specialty of MICROSCOPIC SLIDES in series for educational purposes. Address: 27, HIGH STREET, SHEFFIELD.

NEWTON, CHAMBERS, AND CO., LIMITED, are the proprietors of IZAL PREPARATIONS. Izal is an emulsion of IZAL OIL, and the preparations each of which bears the name IZAL, include EMULSION for DISINFECTING PURPOSES. EMULSION for SURGICAL and INTERNAL ADMINISTRATION, CREAM, in tubes, MEDICAL and TOILET SOAPS, LINT, COTTONWOOL, and GAUZE, LOZENGES, OINTMENT TOOTH POWDER, and EMBROCATION. Headquarters, THORNCLIFFE SHEFFIELD. London agents, ALLEN AND HANBURYS, LTD., BETHNAL GREEN, E. Telegrams: "NEWTON SHEFFIELD."

ORRIDGE AND CO. are CHEMISTS' TRANSFER AGENTS and VALUERS. VALUATIONS have always been a prominent feature with this firm, whose announcements have appeared in the *Pharmaceutical Journal* since the year 1846. Terms on application to 32, LUDGATE HILL, LONDON, E.C.

PARKE, DAVIS AND CO. are manufacturers of FLUID EXTRACTS, NORMAL LIQUIDS, COMPRESSED TABLETS, SUGAR AND GELATIN-COATED PILLS, TABLET TRITURATES,



VIEW OF PRINCIPAL LABORATORIES, DETROIT, U.S.A.

DIGESTIVE FERMENTS, TAKA-DIASTASE, etc., etc., also Sole Agents for the MOSQUERA-JULIA FOOD COMPANY. The Chief Laboratories of the firm are at Detroit, Mich., U.S.A., and their London addresses are—Offices: 21, NORTH AUDLEY STREET, and Laboratories: 34, NORTH ROW, GROSVENOR SQUARE, W. Telegrams: "CASCARA LONDON."

PEARS (A. AND F.), LIMITED, are SOAP MAKERS by special warrant to the Queen and Prince of Wales. Twenty highest awards, including the Gold Medal at Paris in 1889, have been awarded to this firm, which has been established more than a century. London offices, 71-75, NEW OXFORD STREET, W.C. Telegrams: "PEARS LONDON."

PECK (EDWARD) is a wholesale photographic chemist. All kinds of PHOTOGRAPHIC MOUNTS and other articles used in photography may be obtained from his establishment at EAST DEREHAM, NORFOLK.

POPPELREUTER (WILLIAM) is agent for the United Kingdom for HEINRICH HAENSEL'S TERPENELESS CONCENTRATED NON-CLOUDING ESSENTIAL OILS, also for the following VALSOL OILS, known to the medical profession on the Continent as KLEVER'S "VASELINA OXYGENATA," which consist of pure HYDROCARBONS impregnated with OXYGEN. They are IODINE VALSOL, IODOFORM VALSOL, CHLOROFORM-CAMPHOR VALSOL, etc. The head office is at 54, PORTLAND STREET, MANCHESTER. Branch office, 19, ST. DUNSTAN'S HILL, LONDON, E.C. Telegraphic addresses, "POPPEL MANCHESTER" and "OXYGENATED LONDON." Telephone, No. 1666, MANCHESTER, and No. 5771, LONDON.

POTTER AND CLARKE are wholesale and export botanic druggists. They supply NEW REMEDIES, HERBS in PACKETS, COATED PILLS, FLUID EXTRACTS, MALT PREPARATIONS, LOZENGES, ASTHMA SPECIALTIES, COMPOSITION ESSENCE HERB BEER EXTRACT, SEEDS (flower and vegetable), CIGARETTES (medicated), DRUGS and CHEMICALS, etc., etc. The headquarters are at 60, 62, and 64, ARTILLERY LANE, LONDON, E. Manchester address, 54, GREAT ANCOATS STREET. Telegrams: "HOREHOUND LONDON." Telephone, No. 11,100.

POWELL AND BARSTOW (late W. Hurlstone and Co. Established 1830) are manufacturers of every description of ELASTIC GUM SURGICAL INSTRUMENT, ELASTIC STOCKINGS, RUBBER GOODS, etc. Samples, price-lists, and quotations may be procured from 58, BLACKFRIARS ROAD, LONDON, S.E. Telegrams: "ESCOCIA LONDON."

POWELL (THOMAS), LTD., is the proprietor and sole maker of "POWELL'S BALSAM OF ANISEED" and POWELL'S MILD APERIENT PILLS. The firm supplies COUNTER BILLS, large or small, with name and address printed thereon, and SHOW CARDS free and carriage paid on application to any of the wholesale houses, or direct to 1, ALBION PLACE, BLACKFRIARS BRIDGE, LONDON, S.E. Telegrams: "ANISEED LONDON."

PRICE'S PATENT CANDLE CO., LTD., owns the largest CANDLE MAKING concern in the world, and also manufactures PRICE'S PURE GLYCERIN, which is guaranteed to be free from arsenic, and to stand all the tests of the British Pharmacopœia; NIGHT-LIGHTS, the principal of which are "NEW PATENT," "PALMITINE," "IMPROVED CHILDS'," "ROYAL CASTLE," and "NATION'S"; TOILET SOAPS, known as "REGINA," "YORK ROSE," "GLYCERIN CREAM," "SAVON DE FLORE," and "ELAINE"; these are all "MILLED SOAPS" of high quality. The firm's "SANITARY" SOAPS, also milled, contain GLYCERIN, CARBOLIC ACID, COAL TAR, EUCALYPTUS OIL, etc. The Company's address is BELMONT WORKS, BATTERSEA, LONDON, S.W. Telegrams: "BELMONT LONDON," or "PRICE'S BIRKENHEAD."

RACKHAM AND CO. are the makers of RACKHAM'S SMALL BLACK PEARL PILLS, DOG MEDICINES, HORSE AND CATTLE MEDICINES, JAPAN SOAP, and also all kinds of DOG FOODS. Address, ST. PETER'S, NORWICH, NORFOLK.

RAIMES AND CO. are wholesale druggists, analytical and manufacturing chemists. Copies of monthly prices current of drugs, chemicals, and galenicals, with latest market report, also net cash price list of patent medicines and proprietary articles revised to date, will be sent on receipt of trade card. Water and other analyses are undertaken in the firm's laboratory under the superintendence of Mr. D. Ryan, F.I.C. A few of the firm's specialties are EMULSIO OL. MORRHUÆ, SYRUP. HYPOPHOSPH. CO., LIQ. VIOLÆ CONC. 1-15, CONCENTRATED INFUSIONS. Address: YORK. Telegrams: "RAIMES YORK."

RAIMES, CLARK AND CO., wholesale druggists and manufacturing chemists, are one of the oldest wholesale drug firms north of the Tweed, having been established in the year 1816. They commenced the manufacture of GELATIN CAPSULES about a year ago, having previously devoted considerable time and trouble to the study of the entire question. Their machinery is of the latest design, and they have made numerous improvements on the old-fashioned methods. The capsules so made include BLAUD PILLS, EASTON SYRUP, QUININE SULPHATE, CASCARA, CASTOR OIL, GREGORY POWDER, COPAIBA, COPAIBA AND CUBEBS, TURPENTINE, EUCALYPTUS OIL, GUAIACOL, CREOSOTE CARBONATE, ERGOTIN, and CREOSOTE. GUAIACOL is filled into HARD CAPSULES. All the others are very soft and flexible, have a nice shape, and are guaranteed to contain what the label states. A BLAUD CAPSULE, containing the equivalent of three pills, is not much larger than an ordinary BLAUD PILL. A very strong point with Messrs. Raimes, Clark and Co. is that each batch of BLAUD MASS made since they began this branch has been carefully tested and standardised. Besides the capsule department, the firm makes a specialty of the "PREMIER" EXTRACT OF MALT and its combination with COD-LIVER OIL, both of which are articles of very superior quality, and quite equal to any sold at fancy prices. In addition, all the branches of an ordinary wholesale drug business are carried on, while the laboratory, under Mr. George Coull's fostering care, has acquired a high name for excellence of quality of its products. The address of the firm is EDINBURGH. Telegraphic address: "RAIMES EDINBURGH."

RANDALL AND SON are manufacturing pharmaceutical chemists, whose business dates back to 1795. They do a large wholesale and export business in CRUDE and POWDERED DRUGS, CHEMICALS, PHARMACOPŒIAL PREPARATIONS, SURGICAL INSTRUMENTS, DRUGGISTS' SUNDRIES, etc. Amongst their specialties are TINCTURES and FLUID EXTRACTS in bond, AMMONIA, ETHER SOLUBLE ESSENCES, FLAVOURING ESSENCES for confectionery, FRUIT ESSENCES for cordials, PERFUMES, GRANULAR EFFERVESCING PREPARATIONS, and a large variety of saleable PROPRIETARY ARTICLES. The laboratory arrangements are under the direct supervision of the junior partner, Mr. H. Wilson, F.I.C., F.C.S. The address of the firm is SOUTHAMPTON. Telegrams: "QUININE SOUTHAMPTON." Telephone, No. 252.

RANSOM (W.) AND SON are manufacturing pharmaceutical chemists. This firm has been established half a century as distillers of ESSENTIAL OILS and cultivators of MEDICINAL PLANTS. SPECIALTIES:—SOLID AND LIQUID EXTRACTS, EXPRESSED JUICES, ENGLISH ESSENTIAL OILS, SCAMMONY RESIN, JALAP RESIN, ELATERIUM, MERCURIAL PILL and OINTMENT, ALOIN, EUONYMIN, LEPTANDRIN, IRIDIN, HYDRASTIN, DRIED MEDICINAL LEAVES, ENGLISH DANDELION and ACONITE ROOTS, MEDICINAL TINCTURES and SPIRITS supplied for export in bond. All standardised preparations of the British Pharmacopœia are tested and corrected by the firm's analyst before leaving the laboratory. Address, HITCHIN, near LONDON. Telegrams: "RANSOM AND SON HITCHIN."

RAPHAEL (J.) AND CO. are manufacturing opticians, who have laid themselves out to meet the requirements of PHARMACISTS embarked in the OPTICAL TRADE. Besides being prepared to supply every class of OPTICAL GOODS to chemists, they have brought out a special good and cheap TEST CASE, and have arranged for CLASSES in SIGHT-TESTING and CORRECTION under the direction of a practical optician of large experience. Prescriptions, repairs, and special orders are despatched by return of post from their large and convenient premises at 51, CLERKENWELL ROAD, LONDON, E.C. Telegraphic address: "ASTIGMATIC LONDON." Telephone, No. 1299.

REYNOLDS AND BRANSON are manufacturing pharmaceutical chemists, dealers in SURGICAL APPLIANCES, PHOTOGRAPHIC, CHEMICAL AND PHYSICAL APPARATUS, and a large number of ingenious appliances for storing PILL BOXES, ROLLER BANDAGES, ANTISEPTIC DRESSINGS, etc., etc. Address, 13, BRIGGATE, LEEDS. Telegrams: "REYNOLDS LEEDS." Telephone, No. 59.

RICHFORD (E.M.) is a manufacturer and patentee of RUBBER STAMPS and TYPE, PATENT "EFFECTIVE" and "NIGROPADD" (self-inking stamp pads), STENCILS, SEALS EMBOSSING PRESSES, etc. The firm makes a special feature of PRESCRIPTION STAMPS for chemists, and sends full particulars as to agencies free. Address: 44, SNOW HILL, LONDON, E.C. Telegrams: "STAMPERIES LONDON."

ROBARE (J.) is the maker of "AUREOLINE," well known for twenty years as a harmless and effectual preparation for causing the hair to acquire a golden hue. It is put up in 4-oz. and 8-oz. bottles, at prices giving retailers a wide margin of profit. Messrs. R. HOVENDEN AND SONS, of BERNERS STREET, W., and CITY ROAD, LONDON, E.C., are the agents, and it can be obtained of all the wholesale houses.

ROBBINS (J.) AND CO. are pharmaceutical chemists; this firm is believed to be the first to manufacture "PEROXIDE OF HYDROGEN," and to introduce it as a commercial article, and their special preparation continues to hold its own for purity, definiteness of strength, and keeping powers against all others. METHYLENE and SOLUTION OF ETHYLATE OF SODIUM are also specialties of the firm. Other special preparations are VEGETABLE IVORY, CHARCOAL CAPSULES, an efficient remedy for indigestion, and STYPTAC COLLOID for wounds and hæmorrhage. The address of this firm is 147, OXFORD STREET, LONDON, W.

ROBINSON AND CLEAVER are linen manufacturers, who make a specialty of IRISH CAMBRIC POCKET HANDKERCHIEFS and IRISH DAMASK TABLE AND HOUSE LINEN, for which they have been awarded several MEDALS and DIPLOMAS. They send samples and illustrated price lists post free on applying at the works, BELFAST. The London address is 170, REGENT STREET, W.

ROBINSON AND SONS, LTD., are cotton spinners, weavers, and bleachers, manufacturers of LINT, COTTON WOOL and MEDICATED DRESSINGS, and also large makers of CARDBOARD PILL BOXES, HOMŒOPATHIC BOTTLE CASES, etc. The firm makes a specialty of SURGICAL DRESSINGS, such as ABSORBENT COTTON LINTS, ROLL BANDAGES, FLAX LINTS, COTTON WOOLS, ANTISEPTIC DRESSINGS, etc., etc. They are also the sole proprietors of the patent "GAMGEE TISSUE," and of the new CELLULOSE WADDING and DRESSING. The address of this firm is WHEAT BRIDGE MILLS, CHESTERFIELD. London address: 55, FANN STREET, ALDERSGATE STREET, E.C. Telegrams: "STAGLINT CHESTERFIELD (or LONDON)."

ROBINSON (BENJAMIN) is a manufacturer of CONCENTRATED WATERS. Amongst his specialties are to be found AQUA FLOR AURANT., ANETHI, ANISI, CINNAM. VER., ROSÆ, MENTH. PIP., SAMBUCI, CONC., and some dozen others. His address is CHURCH STREET, PENDLETON, MANCHESTER. Telegrams: "BENJAMIN ROBINSON PENDLETON."

ROSBACH SPRINGS (THE), LIMITED, supply the natural mineral waters known as the ROSBACH SPARKLING TABLE WATERS. They are very refreshing and invigorating to the appetite and system, and said to greatly improve the flavour of WINES and SPIRITS. The general control of the business is in the hands of Mr. E. SAMSON, at 19, REGENT STREET, LONDON, S.W.

ROUSE BROTHERS are manufacturing druggists and PACKERS to the TRADE, their special line being CONCENTRATED PREPARATIONS for TOILET and PERFUMERY ARTICLES, the principal of which are ROUSE'S LILAC QUINTESSENCE, CUCUMBER PASTE, CARMINE, ESS. LAVAND., COLOGNE ESSENCE. They also pack SEIDLITZ POWDERS (20 varieties of packing), SELTZOGENE CHARGES AND DRUGS in general, such as SALTS, SENNA, and SODA, and are makers of CHILDREN'S POWDERS in six varieties—cooling and teething, pink, grey, worm, fever, cooling and aperient. PILLS of all kinds are packed by the firm, who also put up a special line of PENNY PACKED GOODS. Their address is 61, CHARLOTTE STREET, TOTTENHAM COURT ROAD, LONDON, W.

SAINSBURY (S.) is a manufacturing perfumer, and has been established over half a century. S. SAINSBURY'S LAVENDER WATER is well known, and can be procured from most of the London wholesale houses. The address of the firm is 176–177, STRAND, LONDON. Telegrams: "LAVENDER LONDON."

ST. DALMAS (A. DE) AND CO. make a specialty of MEDICAL PLASTERS and BANDAGES, which they supply under the trade marks "NATIONAL" and "THE LEICESTER," amongst which are POROUS and RIBBON PLASTERS, HOSPITAL STRAPPING on HOLLAND, BELLADONNA PLASTER on SCARLET FELT, SURGEON'S EMERGENCY CASE, ACCOUCHEMENT BINDERS, MENTHOL LEAVES, SELVEDGE BANDAGES, PATENT WOUND AND BED SORE PADS, ADHESIVE UMBILICAL PADS; MENTHOL, BREAST, MARGINAL and numerous other PLASTERS and BANDAGES. The "NATIONAL" RUBBER, DENTAL DERMAL, and SALICYLIC PLASTERS, MUSTARD LEAVES, PLASTER CADDY, and PATENT STAND and RIBBON PLASTERS on SPOOLS constitute another series, besides the "TRILBY" and "CRESCENT" CORN PLASTERS, "FRANCIS" BRONCHIAL PROTECTORS, etc. The address of the firm is LEICESTER. Telegrams: "ST. DALMAS LEICESTER."

SANFORD AND SON are the makers of SANFORD'S RAT POISON. Address, SANDY, BEDS. Wholesale of MAW, SON, AND THOMPSON, NEWBERY AND SON, EDWARDS AND SON, and others, LONDON. Telegrams: "SANFORD SANDY."

SANITAS COMPANY, LIMITED (THE) are the well-known manufacturers of the "SANITAS" DISINFECTANTS, including FLUID, CRUDE FLUID, OIL, POWDERS, SOAPS, and a great number of general, TOILET, VETERINARY and SURGICAL PREPARATIONS. Among their other disinfectant preparations are CARBOLIC FLUIDS and POWDERS, "OKOL" DISINFECTING FLUID (a non-poisonous emulsion of certain phenoloid bodies of intense germicidal power), "CREOCIDE," a disinfecting liquid miscible with water, being a combination of certain coal tar and essential oil principles. SULPHUR FUMIGATING CANDLES, PATENT PRESERVED PEROXIDE OF HYDROGEN, L.G.B. (corrosive sublimate), PELLETS, CARBOLIC ACID, and PERMANGANATE OF POTASH PELLETS. They also manufacture PATENT DRAIN TESTERS in three patterns, Nos. 1, 2, and 3, and a great variety of FUMIGATING, INHALING, and DISINFECTING APPLIANCES. The firm's address is LETCHFORD'S BUILDINGS, THREE COLT LANE, BETHNAL GREEN, LONDON, E. Telegrams: "SANITAS LONDON." Telephone, No. 1011.

SAUNDERS BROTHERS are analytical and manufacturing chemists, dealers in DRUGGISTS' SUNDRIES and PHOTOGRAPHIC REQUISITES, SYNTHETICAL PRODUCTS for perfumery, etc. Central offices and show rooms: 333, GRAY'S INN ROAD, KING'S CROSS, LONDON, W.C. Telegrams: PIONEERS LONDON."

SAVORY AND MOORE are wholesale, retail, and export druggists, also manfacturers of all kinds of MEDICINE CHESTS for home and foreign service. They also prepare FOODS FOR INFANTS, PEPTONISED FOODS, PEPTIC and PANCREATIC PREPARATIONS, and INVALIDS' FOODS of every kind. Several gold and other medals have been awarded for their foods and medicine chests. The address is 143, NEW BOND STREET, LONDON, W. Telegrams: "SAMOORE LONDON." Telephone, No. 3776.

SAXLEHNER (ANDREAS) is the proprietor of the HUNYADI JANOS NATURAL APERIENT WATER, which has a record of twenty-five years' success in the United Kingdom. Every bottle bears the signature of the proprietor, "ANDREAS SAXLEHNER." Address: 12, TRAFALGAR BUILDINGS, CHARING CROSS, LONDON.

SELLERS (J.) is a manufacturing chemist, and does a wholesale trade both in Great Britain and the Colonies. Some of his principal lines are SELLERS' NAPHTHOL and POTASH SOAPS for toilet purposes, PURE CARMINE, LIQUID CARMINE, improved preparations of CERIUM, including LIQUOR CERII, MISTURA CERII COMP., and MIST. BISMUTHI CO. ET CERII, also SELLERS' MIST. BISMUTHI CO. *c.* PEPSIN. The address is 57, FARRINGDON ROAD, LONDON, E.C.

SHEW (J. F.) AND CO. make the ECLIPSE CAMERAS, for hand or stand, in all sizes, from 21*s.* to £25 each. New list for 1897 will be sent on application. Address, NEWMAN STREET, OXFORD STREET, LONDON, W.

SILVERLOCK (H.) is a chemists' and medical label and general printer. The firm supplies all kinds of COUNTER BILLS, PRICE-LISTS, ILLUSTRATED TRADE CATALOGUES, PROSPECTUSES, PAMPHLETS, SHOW CARDS, FANCY and other LABELS. PRESCRIPTION BOOKS, REGISTER BOOKS for the sale of poisons, LEDGERS, CASH and DAY BOOKS, etc., etc., also CHEMICAL FLY-PAPERS in three designs, INDIARUBBER STAMPS and TORNOGRAPHIC SEALS. Among the specialties are SILVERLOCK'S MEDICAL AND SURGICAL EMERGENCY REFERENCE BOOK, JOHNSON'S COMPENDIUM FORM for entering trade receipts and expenses, and SILVERLOCK'S POSTAL ORDER RECORD BOOK. Address: 92, BLACKFRIARS ROAD, LONDON. Telegrams: "SILVERLOCK LONDON."

SINGLETON AND COLE (LIMITED) are manufacturers of TOBACCO, CIGARS, and CIGARETTES, and dealers in TOBACCONISTS' FANCY GOODS in every variety, also all kinds of NOVELTIES. SINGLETON AND COLE'S PRICE LIST may be had free on application; it contains upwards of two hundred illustrations, and 234 pages of matter, conveniently arranged for reference to everything connected with the TOBACCO TRADE, and is invaluable as a guide to dealers in TOBACCONISTS' GOODS. The address is CANNON STREET, BIRMINGHAM. Telegrams: "SINGLETON BIRMINGHAM."

SKIDMORE (THOMAS) AND SON (Established 1850) are makers of FIRE, FALL, and THIEF-PROOF IRON and STEEL SAFES, STRONG-ROOM DOORS, etc. Prize award, Melbourne, 1888. The firm's address is STAFFORDSHIRE SAFE WORKS, WOLVERHAMPTON.

SMITH (STEPHEN) AND CO. are the proprietors of HALL'S COCA WINE, a powerful nerve tonic and an excellent preparation of its kind. They also make "LIEBIG'S EXTRACT of MEAT AND MALT WINE" (Keystone Brand), the chief feature of which is that it is made with the Liebig Company's (extract) of meat, this firm being the only one having authority to use the Company's name in connection with MEAT and MALT WINES. The address is MALMESBURY ROAD, BOW, LONDON, E. Telegrams, "TRUXILLO LONDON." Telephone, No. 5284, Eastern Exchange.

SMITH (T. and H.) AND CO., manufacturing chemists, are the inventors and sole makers of the "TELA VESICATORIA, or blistering tissue. Among their other preparations are MORPHINE and its SALTS, MORPHINE TARTRATE, CODEINE and its SALTS, APOMORPHINE MURIATE, CAPSICINE, GINGERINE, JALAP and SCAMMONY RESINS, CHLOROFORM, ERGOTINE, CANTHARIDINE, etc., etc. EDINBURGH address: 21, DUKE STREET. LONDON: 12, WORSHIP STREET, E.C. NEW YORK OFFICE: 20, CEDAR STREET. Telegrams: "SMITH COMPANY EDINBURGH" or "MECONIC LONDON."

SOCIÉTÉ CHIMIQUE DES USINES DU RHONE (THE) makes a specialty of serums for therapeutic purposes at the Bacteriological Institute in Lyon-Vaise, including ANTIDIPHTHERITIC SERUM, ANTISTREPTOCOCCIC SERUM, VACCINE LYMPH (Jenner), in sterilised tubes, specially prepared for use in warm climates, ANTITUBERCULOTIC SERUM, and ANTIVENOMOUS SERUM (Calmette). The last is claimed to have proved itself an antidote against the poison of all snakes, and to keep unaltered for more than a year if preserved in a cool place away from light. TRILLAT'S METHOD for disinfecting by means of formic aldehyde and formochlorol is also vested in this firm, the address of which is 8, QUAI DE RETZ, LYONS, FRANCE, and their LONDON AGENTS are R. W. GREEFF, AND CO., 3, EASTCHEAP, E.C.

"SOLAZZI" LIQUORICE (THE IMPORTERS OF), who claim that as this juice is certified by analysis to be a pure extract, there is no risk of prosecution for adulteration. It is specially recommended by the *Lancet*. Supplied by all wholesale druggists, who furnish show cards and handbills.

SOUTHALL BROTHERS AND BARCLAY are manufacturing, analytical and pharmaceutical chemists, wholesale and export druggists, etc. They do an extensive business in drugs, chemicals, pharmaceutical preparations, druggists' sundries, photo-

graphic and chemical apparatus, sanitary towels, etc., etc. They have recently introduced a new preparation "DIMATOS," consisting of an infusorial earth which serves as an excellent filtering medium or as a basis for violet powder, dentifrices, plate powders, etc. Address: BIRMINGHAM. Telegrams: "SOUTHALL BIRMINGHAM."

SOUTHALL (JOHN E.) prints LABELS for aërated water makers manufacturing confectioners, sugar boilers, jam factories and chemists, etc. Printed wrappers, office stationery, and all description of printing. Address: NEWPORT, MONMOUTH.

SQUIRE AND SONS are manufacturing pharmaceutical chemists. Among their numerous specialties and preparations are SQUIRE'S CHEMICAL FOOD for DELICATE CHILDREN, SYRUP of SENNA, CONFECTIO BELÆ RECENTIS, KASAK ELIXIR, KASAK PILULES and CAPSULES, LIQUOR MORPHIÆ BIMECONATIS, LIQUOR MECONII, TOILET REQUISITES known as the LEHLIA CREAM, DENTIFRICE, DUSTING POWDER EXTRACT and SOAP. The address of the firm is 413, OXFORD STREET, LONDON, W.

STEVENS (P. A.), surgeon-dentist, is the sole proprietor and manufacturer of "SILVERY-WHITE GUTTA PERCHA ENAMEL TOOTH STOPPING." Special terms to wholesale houses for sheets or sticks, stamped with their own name. Price list and samples free from 72, MANSFIELD ROAD, LONDON, N.W.

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SURREY SEED COMPANY (THE) supplies RELIABLE ENGLISH SEEDS. VEGETABLE, FLOWER, and AGRICULTURAL SEEDS carefully packed for the Colonies and India are sent free to ship's side. Address, REDHILL, SURREY, ENGLAND.

SURSHAM (F. T.) is a wholesale and export homœopathic chemist. The business was established in 1835. All kinds of HOMŒOPATHIC MEDICINES, TINCTURES, and PILULES are prepared, and particulars may be obtained at DEAN'S COURT, 5, ST. PAUL'S CHURCHYARD, LONDON, E.C.

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SYMES AND CO., LIMITED, are pharmaceutical and manufacturing chemists, wholesale and export druggists. The firm makes a specialty of OL. LAVAND. RECT., which they claim to be the nearest approach to Mitcham oil. They also do a large trade in TONQUIN BEANS, ARAROBA, TAYUYA, LAC BISMUTHI, LAC BISMUTHI ET CERII, etc. The address is LIVERPOOL. Telegrams: "SYMES LIVERPOOL."

TAYLOR (EDWARD) AND CO. supply all kinds of DISPENSING BOTTLES, and are prepared to give special quotations to hospitals, public institutions, and wholesale chemists. Goods are sent carriage paid to any town or port in the world. No shipping charges. Packages free. Samples sent free on application. Bottles made to any size, shape, or colour required. Address, 52, HANOVER STREET, LIVERPOOL. Telegrams: "PHIALS LIVERPOOL."

THORNTON-PICKARD MANUFACTURING COMPANY (THE) make all kinds of apparatus required by PHOTOGRAPHERS, their specialty being the manufacture of SHUTTERS, in many varieties, such as TIME and INSTANTANEOUS, STEREOSCOPIC, STUDIO, and FOCAL PLANE SHUTTERS; the firm also makes the "AMBER" and "RUBY" CAMERAS, AUTOMATIC TRIPODS, and the "THORNTON-PICKARD" PLATE-HOLDERS. The postal and telegraphic address is "THORNTON PICKARD ALTRINCHAM." Telephone No. 69.

TOMLINSON (THOMAS) AND SON are CHEMISTS' TRANSFER AGENTS and VALUERS. Their address is 9, NEW CANNON STREET, MANCHESTER. Telegraphic address: "TOMTOM MANCHESTER."

TOWNSEND (JAMES) is a medical label printer. Among his specialties for chemists are BILLHEADS, BLOTTING PAPERS, PRESCRIPTION ENVELOPES, PRESCRIPTION BOOKS, CIRCULARS, GOLD PAPER LABELS, LINSEED MEAL BAGS, WRAPPING PAPERS, etc., etc., also TOWNSEND'S ART BILLS, ILLUSTRATED FAMILY MEDICINE GUIDE, and PRICE LIST, etc. The address is EXETER. Telegrams: "JAMES TOWNSEND EXETER."

TREBLE (GEORGE) AND SON are CHEMISTS' SHOP FITTERS and SHOW CASE MAKERS. The firm is prepared to send out PLANS and ESTIMATES free of charge to all chemists who are fitting their shops or making alterations. Having laid down extensive machinery they are now in a position to execute orders with dispatch. The address is 59 and 61, RHODES STREET, HOLLOWAY, LONDON, N.

TURNER (J. A.) is the manufacturer of TURNER'S TAMARIND COUGH EMULSION, recommended as beneficial in bronchial irritation, in removing phlegm, allaying cough, and calming the nervous system. Ministers, barristers, public speakers, and singers are said to find it an effective remedy for relaxed throat, hoarseness, etc. It is an elegant and pleasant preparation, and is sold by all the wholesale houses in London and the Provinces, or by the maker, at 202, WHITEFIELD ROAD, EVERTON, LIVERPOOL.

TUNBRIDGE AND WRIGHT, wholesale chemists and druggists, are the originators of the STICKY FLY-PAPERS, known as the "FLY CEMETERY," which they ship to all parts, both at home and abroad. The firm are also the proprietors of DR. MACKENZIE'S CATARRH CURE SMELLING BOTTLE, and of "VIKO," an INSECT POWDER of exceptional strength. The factory and warehouses are in CASTLE STREET, READING. North of England depôt: 4, GALLOWGATE, NEWCASTLE-ON-TYNE. French agency: 34, RUE ST. MARTIN, COGNAC. Telegrams: "FLIES READING."

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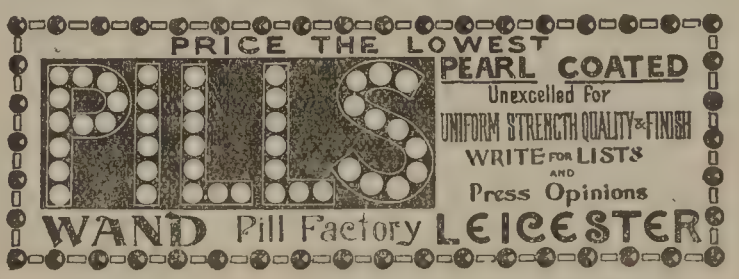

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WARNER (H. H.) AND CO. LIMITED, are the proprietors and manufacturers of WARNER'S SAFE REMEDIES. The London office and warehouse are at 86, CLERKENWELL ROAD, E.C., the chief offices, laboratory, and warehouse being at ROCHESTER, N.Y., U.S.A. They have also branches in TORONTO, CANADA; MELBOURNE, AUSTRALIA; and FRANKFORT, GERMANY. The telegraphic and cable address is "SAFE CURE LONDON."

WARNER (W. R.) AND CO. are manufacturing chemists. Their specialties are SOLUBLE SUGAR, and GELATINCOATED PILLS, PARVULES, GRANULES, EFFERVESCENT SALTS, COMPRESSED DRUGS and "INGLUVIN," a powder prescribed in the same manner and doses as pepsin. The firm has been awarded sixteen World's Fair Medals for the excellence of its preparations, and its headquarters are at PHILADELPHIA, U.S.A. The British agents are MESSRS. F. NEWBERY AND SONS, 1, KING EDWARD STREET, LONDON, E.C. Telegrams: "NEWBERY LONDON."

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WATSON (HORACE) is the proprietor of WATSON'S FAMILY PILLS, and will be glad to send COUNTER BILLS to any chemist in the United Kingdom on receipt of name and address. His address is LACEBY, GRIMSBY. Telegrams: "WATSON LACEBY."

WERNER, PFLEIDERER, AND PERKINS, LTD., are manufacturers of the "UNIVERSAL" KNEADING AND MIXING MACHINE for pill mass, horse balls, tooth pastes, ointments, soaps, powders, etc., also the "SPIRAL BRUSH" SIFTER, with interchangeable sieves, PILL ROUNDERS, COATERS, PIPERS, CUTTERS, and all PILL-ROOM REQUISITES. The address is 117, QUEEN VICTORIA STREET, LONDON, E.C. Telegrams: "ARKTOS LONDON."

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WILKINSON (T.), is a manufacturer of ESSENCE or FLUID EXTRACT OF RED JAMAICA SARSAPARILLA. Established over sixty years. Address: HATTON WALL, LONDON, E.C. Telegrams: "LABORATORY HATTON GARDEN."

WILLOWS, FRANCIS, AND BUTLER are wholesale and manufacturing chemists and export druggists. The firm was established in 1751, and make a specialty of ANIMAL EXTRACTS, such as SUPRARENAL PREPARATIONS, which prove very useful in various forms of vasomotor relaxation and paresis, in exophthalmic goitre, functional or "cyclic" albuminuria, diabetes, etc., etc. PITUITARY BODY PREPARATIONS in the form of fluid extract, elixir, and tablets; BONE MARROW EXTRACT; EXTRACTUM CORTICIS CEREBRI (brain extract), which is recommended for use in those innumerable maladies grouped under such titles as neurasthenia, nervous exhaustion, hypochondriasis, etc.; THYROID EXTRACT (for myxœdema, goitre, cretinism, etc.); THYROIDINE, containing the active principle of the thyroid glands of the sheep, 4 grains equal to about 1/8th of a fresh gland; also PILLS and TABLETS, each containing a dose of thyroidine. Leaflets descriptive of above and list of DRUGS and PHARMACEUTICAL PREPARATIONS on application at 101, HIGH HOLBORN, LONDON. Telegrams: "BURGESS WILLOWS LONDON."

WOOD (VINCENT) is a manufacturer of ELASTIC HOSIERY, TRUSSES, BELTS, SUSPENSORY BANDAGES, etc. Specialities:—The VINWOOL CHEST PROTECTORS, the EUREKA MEDICATED PURE WOOL FELT PROTECTORS, etc. Factories at NOTTINGHAM, LONDON, HERNE HILL, and CARLTON. Address, 3, ST. ANDREW'S STREET, HOLBORN CIRCUS, E.C. Telegrams: "ACME LONDON" or "ELASTIC NOTTINGHAM."

WOOLLEY (JAMES), SONS AND CO., LTD., are manufacturing pharmaceutical chemists and wholesale and export druggists. They manufacture SPIRIT OF NITROUS ETHER which is guaranteed to contain the B.P. maximum proportion of nitrous ether, and to answer the other official tests; AROMATIC SPIRIT OF AMMONIA, made from volcanic ammonia; LEVIGATED OINTMENTS, prepared by steam power; TASTELESS COATED PILLS, with soluble pearl coating; FLAVOURING ESSENCES, used in the manufacture of aërated beverages, cordials, etc.; CONCENTRATED INFUSIONS and DECOCTIONS, FLEXIBLE GELATIN CAPSULES, COMPRESSED PELLETS, TINCTURES, FLUID EXTRACTS, and all other galenical and pharmaceutical preparations. They also carry on an extensive trade in CHEMICAL and PHYSICAL APPARATUS, PHOTOGRAPHIC REQUISITES, MICROSCOPES and ACCESSORIES, SURGICAL INSTRUMENTS and APPLIANCES, DRUGGISTS' SUNDRIES, NURSERY and TOILET REQUISITES, PERFUMERY, PROPRIETARY MEDICINES, etc., a special department being devoted to the manufacture and repairing of trusses of every description. Illustrated catalogues and price-lists are forwarded free to registered chemists on receipt of business card. The laboratories and drug mills of this firm are at KNOWSLEY STREET, CHEETHAM, and the warehouse and offices at VICTORIA BRIDGE, MANCHESTER. Telegrams: "PHARMACY MANCHESTER."

WRIGHT, LAYMAN AND UMNEY are wholesale druggists of long standing, and occupy a prominent position in the London drug trade. They combine the functions of manufacturing pharmaceutical chemists, importers, and distillers of essential oils, drug grinders, analytical chemists, etc., etc. Of late the firm has devoted special attention to essential oils and their examination, with the result that business has developed greatly in this direction. In addition to CRUDE and POWDERED DRUGS, CHEMICALS of every description, ESSENTIAL OILS, GALENICAL PREPARATIONS, CON-

CENTRATED FRUIT ESSENCES, TOILET ESSENCES, GRANULAR EFFERVESCENT PREPARATIONS, etc., the firm is the sole maker of WRIGHT'S 'LIQUOR CARBONIS DETERGENS" and WRIGHT'S COAL TAR SOAP, both articles of special excellence. WRIGHT, LAYMAN and UMNEY supply the British Army with Drugs and Chemicals, and are also exporters to the Colonies, etc., and have a special concession from the Board of Inland Revenue for exporting all alcoholic preparations under drawback. Their Warehouses, Laboratories, Drug Mills, etc., are in SOUTHWARK STREET and UNION STREET, LONDON, S.E. Telegrams, "UMNEY LONDON." Telephone, No. 4608.

WYLEYS (LIMITED) are manufacturers of PHARMACEUTICAL PREPARATIONS. This firm has been established nearly a century and a half, and has a laboratory book dated 1757. SPECIALTIES:—EXTRACTS STANDARDISED TINCTURES GELATIN and PEARL COATED PILLS, COMPRESSED PELLETS, TROPELS, FLEXIBLE GELATIN CAPSULES, GRANULAR EFFERVESCENT PREPARATIONS, EXTRACT OF MALT, etc. Manufactory and offices, COVENTRY. Branch house: MOOR STREET, BIRMINGHAM. Telegrams: "WYLEYS COVENTRY (or BIRMINGHAM)."

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Burroughs, Wellcome and Co. .. 3
Christy and Co. 4
Evans, Lescher and Webb 5
Evans, Sons and Co. 5
Harker, Stagg and Morgan 6
Hearon, Squire and Francis 7
Kemp and Son 9
Lorimer and Co. 9
Smith, T. and H., and Co. 13
Woolley, Sons and Co. 15
Wright, Layman and Umney 15

Compressed Medicines.
Allen and Hanburys 1
Burroughs, Wellcome and Co. .. 3
Duncan, Flockhart and Co. 5
Leonard and Co. 9
Parke, Davis and Co. 11

Cotton Wool.
Robinson and Sons 12

Dentifrices.
Beecham, T. 2
Fentiman and Co. 5
Sanitas Co., Ltd. 13

Dentistry.
Browning, A. J. 3
Fentiman and Co. 5
Macdonalds, Ltd. 9
Stevens, P. A. 14

Disinfectants.
Condy and Mitchell 4
Fletcher Brothers and Co. 6
Kay Bros. 8
Kühn, B. 9
Newton, Chambers and Co. 11
Sanitas Co., Ltd. 13

Distillers.
Boord and Son 2
Burroughs, Jas. 3

Druggists' Sundries.
Barclay and Sons, Ltd. 1
Evans, Lescher and Webb 5
Evans, Sons and Co. (Savars) 5
Kay Bros., Ltd. 8
Maw, S., Son and Thompson 10
Newbery, F., and Sons 11
Saunders Bros. 13

Drugs.
Burgoyne, Burbidges and Co. 3
Evans, Lescher and Webb 5
Evans, Sons and Co. 5
Evans, Gadd and Co. 5
Farbenfabriken (Bayer and Co.). 5
Goodall, Backhouse and Co. 6
Harker, Stagg and Morgan 6
Hearon, Squire and Francis 7
Kemp and Son 9
Potter and Clarke 11

Drugs (contd.).
Ransom, W., and Son 12
Woolley, Sons and Co. 15
Wright, Layman and Umney.... 15
Wyleys, Ltd..... 15

Drug Grinders.
Evans, Sons and Co. 5
Goodall, Backhouse and Co..... 6
Wright, Layman and Umney 15

Drysalteries.
Goodall, Backhouse and Co. 6
Storry, Smithson and Co. 14

Dyes.
Maypole Soap Syndicate 10

Embrocation.
Elliman, Sons and Co. 5

Enemas.
Evans, Sons and Co. 5
Maw, S., Son and Thompson 10
Powell and Barstow 11

Engravers.
Berkley, J. 2

Essences.
Bovril, Ltd. 2
Goodhall, Backhouse and Co.... 6
Idris and Co., Ltd. 8
Newball and Mason 11
Randall and Son 12
Rouse and Co. 12
Woolley, Sons and Co. 15

Essential Oils.
Evans, Sons and Co. 5
Harker, Stagg and Morgan 6
Jakson, J., and Co. 8
Poppelreuter, W..... 11
Ransom and Son..... 12
Sanitas Co., Ltd..... 13
Symes and Co..... 14
Warrick Bros. 15
Wright, Layman and Umney .. 15

Ether.
Duncan, Flockhart and Co. 5
Howards and Sons 8
Macfarlan, J. F., and Co..... 9
White, A., and Sons 15
Woolley, Sons and Co. 15
Wright, Layman and Umney .. 15

Eucalyptus Oil.
Sanitas Co., Ltd..... 13

Extract Meat.
Bovril, Ltd. 2
Brand and Co. 3
Liebig Co. 9

Extracts (Fluid).
Allen and Hanburys 1
Anderson and Co. 1
Burgoyne, Burbridges and Co. .. 3
Evans, Gadd and Co..... 5
Evans, Lescher and Webb 5
Evans, Sons and Co. 5
Harker, Stagg and Morgan 6
Hearon, Squire and Francis 7
Moss and Co. 10
Parke, Davis and Co. 11
Potter and Clarke 11
Randall and Son 12
Ransom, W., and Son 12
Wright, Layman and Umney 15

Extracts (Solid).
W., and 12

Feeding Bottles.
Allen and Hanburys 1
Burroughs, Wellcome and Co. .. 3
Evans, Sons, and Co. 5
Maw, S., Son and Thompson 10

Filters.
Berkefeld Filter Co. 2
Manson Filter Co. 10

Flesh Brushes.
Barclay and Sons, Ltd..... 1
Dinneford and Co. 5
Maw, S., Son and Thompson 10

Fly Papers.
Ford, Shapland and Co. 6
Mather and Co. 10
Tunbridge and Wright 14

Foods.
Allen and Hanburys 1
Beanes and Co. 2
Benger, F. B., and Co. 2
Brand and Co. 3
Burroughs, Wellcome and Co. .. 3
Christy, T., and Co. 4
First Swiss Milk Co. 5
Goodall, Backhouse and Co. 6
Hearon, Squire and Francis 7
Hooper, Struve and Co. 7
Liebig Co. 9
Lorimer and Co. 9
Mosquera-Julia Food Co. 10
Savory and Moore 13
Squire and Sons 14

Fuller's Earth.
Barclay and Sons, Ltd. 1
Rouse Bros. 12

Glycerin.
Gibbs, D. and W. 6
Price's Candle Co., Ltd. 11

Granular Preparations.
Burgoyne, Burbidges and Co. .. 3
Duncan, Flockhart and Co. 5
Evans, Sons and Co. 5
Harker, Stagg and Morgan 6
Hearon, Squire and Francis 7
Lorimer and Co. 9
Raimes and Co. 11
Raimes, Clark and Co. 11
Wright, Layman and Umney 15

Gums.
Fink and Co. (Arabic, etc.)..... 5

Gutta Percha Enamel.
Stevens, P. A. 14

Herb Beer Extracts.
Newball and Mason 11
Potter and Clark..... 1

Homœopathic Medicines.
Epps and Co. 5
Gould and Son..... 6
Keene and Ashwell 9
Sursham, F. T. 14

Inhalers.
Burroughs, Wellcome and Co. .. 3
Martindale, W..... 10
Maw, S., Son and Thompson 10
Sanitas Co., Ltd..... 13

Insecticides.
Barclay and Sons, Ltd..... 1
Sanitas Co., Ltd..... 13

Labels.
Ford, Shapland and Co. 6
Silverlock, H. 13
Southall, J. E. 14
Townsend, J. 14

Leeches.
Fitch and Nottingham 5

Lime Juice.
Evans, Sons and Co. 5

Linen Goods.
Robinson and Cleaver 12

Linseed (Crushed).
Evans, Gadd and Co..... 5
Kemp and Son..... 9
Mumford, G. S. 11
Storry, Smithson and Co..... 14

Lint.
Burgoyne, Burbidges and Co..... 3
Christy, T., and Co. 4
Maw, S., Son and Thompson 10
Robinson and Sons..... 12

Liquorice.
Mumford, G. S. 11
Solazzi..... 13

Lozenges.
Allen and Hanburys 1
Guest and Co. 6
Lorimer and Co..... 9
Morson and Sons..... 10
Raimes and Co. 11
Randall and Son 12
Warrick Bros. 15

Machinery.
Melin, C. 10
Werner and Pfleiderer (Kneading and Sifting) 15

Magnesia.
Dinneford and Co. 5
Evans, Gadd, and Co. 5
Evans, Sons and Co. 5
Henry, T. and W. (Calcined) 7
Howards and Sons 8

Malt Extract.
Allen and Hanburys 1
Anderson and Co. 1
Burroughs, Wellcome and Co. (Kepler's) 3
Harker, Stagg and Morgan 6
Hearon, Squire and Francis 7
Lorimer and Co. 9
Moss, J., and Co. 10
Parke, Davis and Co..... 11
Raimes and Co. 11
Raimes, Clark and Co. 12
Wright, Layman and Umney 15

Marking Ink.
Hickisson (Bond's)..... 7

Menthol.
Burroughs, Wellcome and Co. .. 3
Christy, T., and Co. 4
Evans, Lescher and Webb 5
Maw, S., Son, and Thompson.... 10

Mercurials.
Howard and Sons 8

Methylated Spirit.
Boord and Son 2
Burrough, J..... 3
Smith, S., and Co. 13

Methylene.
Robbins, J., and Co. 12

Microscopical.
Hinton, Ernest 7
Leitz, E..... 9
Moores, De Saulles and Co. 10
Newsholme, G. T. W..... 11

Milk (Condensed).
First Swiss Milk Co. 5

Mineral Waters.
Apollinaris Co., Ltd. 1
Rosbach Springs, Ltd. 12
Saxlehner, A. 13

Morphine.
Macfarlan, J. F., and Co..... 9
Smith, T. and H., and Co. 13

Ointment Bases.
Burroughs, Wellcome, and Co. .. 3
Chesebrough Manufacturing Co. 4
Christy, T., and Co. 4

Opticians.
Raphael, J., and Co. 12

Otto of Roses.
Warrick Brothers 15

Paints and Colours.
Storry, Smithson and Co. 14

Packed Goods.
Evans, Gadd and Co. 5
Lorimer and Co..... 9
Rouse Brothers 12

Pastilles.
Guest and Co. 6
Jackson, T. 8

Peppermint Oil.
Jakson, J., and Co. 8
Ransom, W., and Son..... 12

Pepsin.
Benger, F. B., and Co. 3
Bullock and Co. 3
Burroughs, Wellcome and Co. .. 3
Giles, Schacht and Co. 6
Morson and Son 10
Parke, Davis and Co. 11
Savory and Moore 13
Warner and Co. 15

Perfumery.
Barclay and Sons, Ltd..... 1
Blondeau et Cie 2
Burgoyne, Burbidges and Co. .. 3
Burroughs, Wellcome and Co. .. 3
Evans, Gadd and Co..... 5
Evans, Sons and Co. 5
Hewlett, C. J., and Son 7
Jakson and Co..... 8
Newbery, F., and Sons..... 11
Pears, A. and F., Ltd. 11
Price's Patent Candle Co..... 11
Sainsbury, S. 12
Sanitas Co., Ltd..... 13
Saunders Bros..... 13
Warrick Bros. 15
Woolley, Sons and Co. 15
Wright, Layman and Umney.... 15

Perloids.
Keene and Ashwell 9

Petroleum Products.
Allen and Hanburys 1
Chesebrough Manufacturing Co. 4
Christy, T., and Co. 4

Peroxide of Hydrogen.
Robbins and Co..... 12
Sanitas Co., Ltd. 13

Pharmaceutical Preparations.
Allen and Hanburys 1
Burgoyne, Burbidges and Co. .. 3
Burroughs, Wellcome and Co. .. 3
Dieterich, E. .....
Duncan, Flockhart and Co..... 5
Evans, Gadd and Co..... 5

Pharmaceutical Preparations (contd.).

Evans, Lescher and Co. 5
Evans, Sons and Co. 5
Farbenfabriken (Bayer and Co.) 5
Giles, Schacht and Co. 6
Hearon, Squire and Francis 7
Hewlett and Son 7
Howards and Sons 8
Kemp and Son 9
Lorimer and Co. 9
Macfarlan, J. F., and Co. 9
Martindale, W. 10
Morson and Son 10
Moss, J., and Co. 10
Parke, Davis and Co. 11
Potter and Clarke 11
Raimes and Co. 11
Raimes, Clarke and Co. 12
Randall and Son 12
Smith, T. and H., and Co. 13
Southall Bros. and Barclay 13
Squire and Sons 14
Symes and Co. 14
Willow, Francis and Butler 15
Woolley, Sons and Co. 15
Wright, Layman and Umney 15
Wyleys, Ltd. 15
Zimmermann, A. and M. 15

Photographic Goods.

Barclay and Sons, Ltd. 1
Burroughs, Wellcome and Co. .. 3
Evans, Sons and Co. 5
Harrington Brothers 7
Howards and Sons (Chemicals) .. 8
Moores, De Saulles and Co. 10
Peck, E. 11
Raphael, J., and Co. 12
Reynolds and Branson 12
Shew, J. T., and Co. 13
Thornton-Pickard and Co 14
White, Alfred, and Sons 15
Woolley, J., Sons and Co. 15
Zimmerman and Co. 15

Pill Machines.

Werner, Pfleiderer and Co. 15

Pills, Coated, etc.

Allen and Hanburys, Ltd. 1
Beecham, Thomas 2
Burgoyne, Burbidges and Co. 3
Cox and Co. 4
Evans, Gadd and Co. 5
Evans, Lescher and Webb 5
Evans, Sons and Co. 5
George, J. E. 6
Harker, Stagg and Morgan 6
Hearon, Squire and Francis 7
McKesson and Robbins 9
Newbery, F., and Sons 11
Parke, Davis and Co. 11
Raimes and Co. 11
Raimes, Clark and Co. 12
Southall Brothers and Barclay .. 13
Wand, S. (Pearl-coated) 1
Warner, W R., and Co. 15
Wright, Layman and Umney 15
Wyleys, Ltd. 15

Pipes.

Biltor Co. 2

Plasters.

Evans, Sons and Co. 5
Mather, W., Ltd. 10
Maw, S., Son and Thompson 10
St. Dalmas, A. De 13

Polishing Materials.

Bradley and Bourdas (Albatum) 2

Printing.

Bowers Bros. 2
Ford, Shapland and Co. 6
Silverlock, H. 13
Southall, J. E. 13
Townsend, J. 14

Proprietary Medicines.

Barclay and Sons, Ltd. 1
Beecham, T. (Pills) 2
Bradley and Bourdas 2
Brecknell, Turner and Sons 3
Davenport, J. T. 4
Dinneford and Co. 5
Evans, Gadd and Co. 5
Evans, Lescher and Webb 5
Evans, Sons and Co. 5
George, J. E. 6
Goodall, Backhouse and Co. 6
Harvey, S. 7
Kay Bros. 8
Lambert and Co. (Scott's Pills) .. 9
Newbery, F., and Sons 11
Powell's Balsam 11
Rackham and Co. 11
Turner, J. A. 14
Warner, H. H., and Co., Ltd. 14

Radiographic Apparatus.

Reynolds and Branson 2

Rennet.

Duncan, Flockhart and Co. 5
Evans, Gadd and Co. 5
Fullwood and Bland 6

Rubber Goods.

Hooper, Struve and Co. 7
Maw, S., Son and Thompson 10
Powell and Barstow 11

Sauces and Pickles.

Goodall, Backhouse and Co. 6
Maw, S., Son and Thompson 10

Seeds.

Potter and Clarke 11
Surrey Seed Co. 14

Seidlitz Powders.

Rouse Bros. 12

Seltzogenes.

Evans, Sons and Co. 5
Maw, S., Son and Thompson 10

Serums.

Allen and Hanburys 1
Burroughs, Wellcome and Co. .. 3
Greeff and Co. 6

Shaving Materials.

Barclay and Sons 2
Barker and Sons 2
Maw, S., Son and Thompson 10

Sheep Dips.

Fletcher Bros. and Co. 6
Sanitas Co., Ltd. 13

Shop Fitters.

Baughan and Co. 2
Evans, Son and Co. 5
Howlett, S. 8
Maw, S., Son and Thompson 10
Treble, G., and Son 14

Soaps.

Allen and Hanburys 1
Barclay and Sons, Ltd. 1
Blondeau et Cie. (Vinolia) 2
Brecknell, Turner and Son .....
Duncan, Flockhart and Co. 5
Evans, Sons and Co. 5
Gibbs, D. and W. 6
Harvey, S. 7
Lorimer and Co. 9
Midgley, C., Ltd. 10
Pears, A. and F., Ltd. 11
Sanitas Co., Ltd. 13
Wright, Layman and Umney 15

Soloids.

Burroughs, Wellcome and Co. 3

Spectacles.

Raphael, J., and Co. 12

Spices.

Goodall, Backhouse and Co. 6

Spirits.

Boord and Son 2
Burroughs, Jas. 3

Sponges.

Evans, Sons and Co. 5
Maw, S., Son, and Thompson 10

Stills.

Dicker, C. 4

Stoppers.

Melin, C. 10

Surgical Appliances.

Allen and Hanburys, Ltd. 1
Allsop, A. 1
Barclay and Sons, Ltd. 1
Bed Support Co. 2
Burgoyne, Burbidges and Co. .. 3
Evans, Sons and Co. 5
Hawksley, T. 7
Haywood, J. H. 7
Ickringill's Hygienic Cloth Syndicate, Ltd. 8
Lindsey and Sons 9
Macfarlan, J. F., and Co. 9
Maw, S., Son, and Thompson 10
Powell and Barstow 11
Reynolds and Branson 12
Robinson and Sons 12
St. Dalmas and Co. 13
Sanitas Co., Ltd. 13
Southall Brothers and Barclay .. 13
Wood, V. 15
Woolley, Sons and Co. 15

Syphons.

Chemists' Aërated and Mineral Waters Association, Ltd. 3
Idris and Co., Ltd. 8
Melin, C. 10

Syrups.

Idris and Co., Ltd. 8

Tablets (Compressed).

Allen and Hanburys 1
Burroughs, Wellcome and Co. .. 3
Leo and Co. 9

Tabloids.

Burroughs, Wellcome and Co. .. 3

Tabellæ.

Allen and Hanburys 1

Test Solutions.

Sutton and Co. 14

Thermometers.

Barclay and Sons, Ltd. 1
Maw, S., Son and Thompson 10
Raphael, J., and Co. 12
Reynolds and Branson 12

Tinctures.

Evans, Sons and Co. 5
Harker, Stagg and Morgan 6
Hearon, Symes and Francis 7
Hewlett, C. J., and Son 7
Moss, John and Co. 10
Parke, Davis and Co. 11
Southall Bros. and Barclay 13
Wright, Layman and Umney 15
Wyleys, Ltd. 15

Tobacco and Cigars.

Barclay and Sons 1
Singleton and Cole, Ltd. 13

Tooth Pastes.

Beecham, T. 2
Maw, S., Son and Thompson 10

Vaccination (Lymph and Shields).

Burgoyne, Burbidges and Co. 3
Cowan, W. (Shields) 4
Hime, Dr. 7
Vaccine Association (Lymph) 1

Valuers and Transfer Agents.

Judd and Manners 8
Orridge and Co. 11
Tomlinson, Thos., and Son 14

Veterinary Medicines.

Elliman, Sons and Co. .....
Gregory and Co. 6
Sanitas Co., Ltd. 13

Vinolia Preparations.

Blondeau et Cie 2

Waters, Concentrated.

Robinson, B. 12

Wholesale Druggists.

Allen and Hanburys 1
Anderson and Co. 1
Burgoyne, Burbidges and Co. .. 3
Evans, Gadd and Co. 5
Evans, Lescher and Webb 5
Evans, Sons and Co. 5
Goodall, Backhouse and Co. 6
Harker, Stagg and Morgan 6
Hearon, Squire and Francis 7
Hewlett and Son 7
Kemp, Wm., and Son 9
Macfarlan, J. F., and Co. 9
Morson and Son 10
Moss, John, and Co. 10
Potter and Clarke 11
Raimes and Co. 11
Raimes, Clark and Co. 12
Randall and Son 12
Southall Brothers and Barclay .. 13
Symes and Co. 14
Willows, Francis and Butler 15
Woolley, Jas., Sons and Co. 15
Wright, Layman and Umney 15
Wyleys, Ltd. 15

Wines and Spirits.

Boord and Son 2
Burroughs, J. 3
Goodall, Backhouse and Co. 6
Hirst, Brooke and Hirst 7
Millar, A., and Co. 10
Robinson, B. 12
Smith, S. and Co. (Orange) 12
Wright, Layman and Umney 15

What Readers Say

Of the recent improvements in the

PHARMACEUTICAL JOURNAL

Extracts from Letters that have been received:

"As a subscriber to the Society and Journal for nearly a quarter of a century, I have been pleased to be able to drop two or three other journals and to find what I wanted to read in our own."
E. J. APPLEBY (Bath).

"The alteration in the JOURNAL must have enhanced its value enormously to everyone interested in the progress of pharmacy, and necessarily its advantages as an advertising medium must correspondingly increase." LEO. ATKINSON (Brockley Road).

"As regards the Market Reports, as a retailer I am now able to judge for myself when and how to buy."
FRED. BASCOMBE (Brixton).

"Improved by the combining of the commercial element with the scientific, a departure which I feel sure every practical pharmacist will appreciate." F. E. BILSON (Bournemouth).

"The recent changes are decided improvements, and should tend to make the Journal more popular, and so increase its value as an advertising medium." E. BING & SON (Canterbury).

"It has been brought into touch with all interests."
F. C. J. BIRD (Notting Hill).

"Indispensable as a work of reference, apart from the transitory interest of the week's news, and in this respect its usefulness to me has been materially increased by the extended scope of general information now given. . . . Our Journal is, I believe, one of which all members of the Society have reason to be proud."
J. OLDHAM BRAITHWAITE (Twickenham).

"That which was good in the old régime has been retained, and to it has been added much that is of interest to the pharmacist."
T. MALTBY CLAGUE (Newcastle).

"Its value to the trade has quite doubled since the improvements of the last 18 months." OWEN A. CLARK (Bury St. Edmunds).

"I have much pleasure in saying, as one who has been a constant reader for the past 25 years, that the changes effected have materially enhanced its value both to the retail Pharmacist and to the wholesale dealer and manufacturer." M. CONROY (Liverpool).

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JOHN A. COPE (Derby).

"As an advertising medium, it has immensely improved, and we very frequently get excellent results from advertising our special articles in your paper."
THOS. CHRISTY (Lime Street).

"As a typical trade journal I think the PHARMACEUTICAL JOURNAL could not be well excelled."
THOMAS CRITCHLEY (Blackburn).

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"Much more in touch than formerly with the members and trade generally. As a consequence the Journal becomes a much better medium for advertisements."
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"As a business representative organ, the PHARMACEUTICAL JOURNAL is under the new arrangement a great improvement. On numerous occasions during the past year I have been able through its Market Reports to buy goods to great advantage."
A. W. GERRARD (Chertsey).

"Greatly increased in value, and rendered more interesting and instructive as a scientific and trade journal."
JOHN GREEN (Deal).

"I consider that the Journal has been brought much more into touch with the 'Trade' by the recent extension. . . . . The Market Report is extremely well done."
G. A. GRIERSON (Lincoln).

"The value of the Journal to all connected with the trade has been immensely enhanced." J. N. GWATKIN (Brighton).

"The Journal does a very good work in giving a great deal of useful and varied information, keeping one in touch with the Pharmacy of to-day." JOHN HALLAWAY (Carlisle).

"The additional matter contained in the PHARMACEUTICAL JOURNAL during the past 18 months has greatly enhanced its value."
JAMES HINDS (Coventry).

"Of great advantage to all concerned, *i.e.*, the proprietors, the readers, and the advertisers. The Market Reports are of considerable value to the retailer, who cannot afford in these competitive days to order the highest priced article regardless of market price." B. KEEN (Bristol).

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What Readers Say

Of the recent improvements in the

PHARMACEUTICAL JOURNAL

Extracts from Letters that have been received:

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"One needs at the present moment to be as well posted in sudden advances and declines in prices as in the various scientific discoveries and introduction of new remedies and scientific products. The Journal now supplies both classes of information, and should be read by all Pharmacists." J. HINTON LAKE (Exeter).

"I consider it now superior to the other journals, and invariably open the Journal first." LANCASHIRE SUBSCRIBER.

"The change that has taken place during the past 18 months is a grand improvement." ALEX. J. T. LONG (Guildford).

"The Journal has been greatly increased in value to the bulk of its subscribers by the additions made."
W. MINCHIN (Gloucester).

"My own opinion may be best proved by the fact that whereas in former days I sometimes omitted to open my Journal, now I should really miss it. I find the Market Report very useful."
J. B. NICKOLLS (Guernsey).

"Whilst not losing any of its scientific value, it has become more interesting as a trade paper; the Market Reports are especially useful." CHARLES RANKEN (Sunderland).

"For pharmacists I know no better advertising medium."
W. ROBERTSON (Elgin).

"A large wholesale manufacturer told me he is well satisfied with the improvement of the Journal as an advertising medium, and it must be a very valuable means of bringing pharmaceutical preparations, &c., before a large number of buyers."
R. A. ROBINSON (Brompton Road).

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"The addition of weekly market reports and the great variety and number of advertisers make it commercially indispensable . . . . Personally I have for more than a year discontinued subscribing to any other trade journal, finding in it, as at present conducted, all that I require." NORMAN S. SMITH (Coleford).

"The Market Reports are of considerable value, and other new matter of various kinds is, I am inclined to think, very acceptable to the general reader. The firm of manufacturing chemists with which I am connected has proved it to be of use as an advertising medium." FRANCIS SUTTON (Norwich).

"Much more popular and interesting. The introduction of special articles, trade reports, &c., adds materially to its value."
G. S. TAYLOR (St. John's Wood).

"Now one hears on all sides that it has vastly improved, and members appear to take more interest in the Journal."
CHARLES THOMPSON (Sparkbrook).

"The Drug Market *résumé* is invariably up to date, and is a fair comment, and as a rule an accurate report of fortnightly drug auctions and daily transactions on 'Change. The selection of original papers for abstraction is judiciously made, and the pith of the subject is generally so plainly put as to be a decided help to the overworked Pharmacist, whose only chance against keener traders is not only to keep, but to show himself to be in touch with all passing scientific novelties, as well as being closely posted in those matters in which the medical practitioner invariably seeks his aid. I am of opinion the Journal is more appreciated by the bulk of our craft than it formerly was, and hence it becomes a more valuable advertising medium."
CHARLES UMNEY (Southwark).

"The supplementary matter introduced into the Journal places it in touch with every branch of the trade. In its new form I find valuable information, not only in regard to study and manufacture, but also in actual trading operations." A. WEDDELL (Colchester)

"Speaking for myself, the result has been to make it unnecessary to take a trade journal, for by the addition of a market report and items of news of general interest, I find all I want in the "P. J."
EDMUND WHITE (St. Thomas' Hospital).

"I consider that the additions were needed, and have well supplied the need in all respects." ALEX. WOOD (Brentford).

"The change you made has, in my opinion, been much appreciated, and has distinctly increased the popularity of the Journal. The Market Reports are generally accurate, and as useful as a weekly report can be. The special articles on photography and microscopy have been particularly useful. The personal and local notes have proved to be a departure well worth cultivating. These have increased the value of the Journal as an advertising medium."
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Market Report

And Prices Current of Drugs, Chemicals, Oils, and Seeds.

The quotations here given are in all cases the lowest net cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

[Specially Compiled for the 'Pharmaceutical Journal.']

LONDON REPORT.

LONDON, NOVEMBER 26, 1896.

Business has been quiet again this week, with practically very few changes. Quinine and morphia unaltered, glycerin slow, cardamoms distinctly cheaper, ipecacuanha and Sumatra benzoin slightly easier. We quote as follows :—

ACETANILID.—The combined makers are firm at 1s. 4½d. per lb. for 10-cwt. lots, 1s. 5d. for 1 cwt. and upwards, and 1s. 6d. per lb. for smaller quantities, but there are a few second-hand sellers a little below these figures.

ACIDS.—*Acetic*: The B.P. quality is unchanged at 15s. per cwt. for half-ton lots, whilst the *glacial* quality is quoted at 38s. per cwt. in carboys. *Benzoic*: The B.P. quality is to be had at 3¼d. to 3½d. per oz. as to quantity. *Boracic*: Convention prices remain at 30s. per cwt. for *crystals*, and 32s. for *powder*, but outside offerings come 1s. per cwt. below these figures. *Chrysophanic* market is weak; *Continental* makers quote 18s. per lb., but quality is not considered satisfactory; *British* makers quote 21s. to 21s. 6d. per lb. *Citric* is quiet at 1s. 1⅜d. to 1s. 1½d. per lb. for B.P. *crystals*, and ¼d. per lb. more for *powder*. *Gallic*: Very firm at 1s. 10½d. to 2s. per lb. according to quantity. *Lactic* is freely offered at slightly easier prices, 2s. 6d. per lb. being quoted for the best *white s.g* 1·21. *Oxalic* continues unchanged at 3¾d. per lb., but an advance seems very probable. *Pyrogallic* in 1 oz. bottles is offered at 11s. to 12s. per lb. as to quality and maker. *Salicylate*: *Powder* is quoted 1s. 4d. to 1s. 10d. per lb., *crystals*, 1s. 6d. to 2s. per lb., and *physiologically pure* 3s. 6d. to 4s. per lb., all in bulk packages and according to quantity. *Tannic*: The *B.P.* quality offers at 1s. 8½d. to 1s. 9½d. per lb. in large bulk, whilst technical qualities are to be had at from 11d. to 1s. 2d. per lb. according to quality and make. *Tartaric*: *English* is quoted at 1s. 1d. per lb. whilst *foreign* can be had at 12½d. per. lb.

ACID CARBOLIC.—Market remains very firm, with a rising tendency, and it would be difficult to secure any quantity on basis of 7d. per lb. for *ice cryst.*, 35° to 36°, in 2½ cwt. drums, and overcasks, 39° to 40°, being ¾d. per lb. dearer, and *detached cryst.*, 39° to 40°, 1¾d. per lb. dearer than the 35° to 36° acid. *Crude*: 60°, 2s. 2d. per gallon; 75°, 2s. 6d. per gallon; *liquid*, 95 per cent., 1s. 1d. per gallon.

ALOIN.—The cheap offers for America have induced the English makers to lower their own prices which are now from 3s. to 3s. 6d. per lb. according to quantity.

AMBERGRIS.—*Finest grey* is firm at 100s. to 110s. per oz.; *fine*, 60s. to 80s.; and *chips*, 35s. to 50s. per oz., according to uality.

AMMONIA COMPOUNDS.—*Sulphate* is dearer, but closes dull and inactive. Grey, prompt, 24 per cent., London, £7 17s. 6d. to £8 per ton; Hull, £7 16s. 3d.; Leith, £7 11s. 3d.; Beckton, prompt, £7 15s. to £7 17s. 6d. per ton. *Carbonate* unchanged at 3d. to 3¼d. per lb. as to package. *Sal ammoniac* steady at 37s. per cwt. for *firsts*, and 35s. per cwt. for *seconds*, with *crushed*, 2s., and *powdered*, 4s. per cwt. extra.

ARAROBA.—The demand is slack; there is some little quantity of good quality offering at about 6s. per lb.

ATROPINE—Unchanged at late advance, price for *Sulphate* in quantity being 9s. 9d. pure, 2s. 6d. per oz., A further advance is not improbable in view of the scarcity of belladonna root.

BALSAMS.—*Canada* steady, at 1s. per lb. *Copaiba*—good *Maranham* is firm at 2s. to 2s. 1d. per lb. *Para* is quoted at 1s. 9d. to 1s. 10d. per lb. *Peru* very firm at 7s. 4½d. to 7s. 6d. per lb., as to quantity. *Tolu*: genuine qualities are firmly held at 3s. 2d. to 3s. 3d. per lb., and although lower prices are spoken of, quality of these lots is said to be undesirable.

BARKS.—*Angostura*: 32s. to 35s. per cwt. as to quantity. *Aurant. Exot.*, fair bright machine-cut 6½d. per lb. *Canella alba* quiet at 23s. to 26s. per cwt. *Cascara Sagrada* is quiet at 17s. 6d. per cwt. *Cinchona*: *P.B.* good *chips* can be obtained at 2d. to 3d. per lb., whilst *quills* are quoted 10d. to 1s. per lb. *Condurango* quiet at 7d. to 9d. per lb. as to quantity. *Hamamelis*: 4d. to 6d., as to quantity and seller.

BEANS.—*Calabar* in very little demand at 3d. per lb. *Ignatius* quiet at 1s. per lb.

BIRD-LIME.—*Japanese* is offered in large bulk at 8d. to 9d. per lb., but demand is slack. It is thought these prices will hardly prove remunerative to shippers.

BISMUTH SALTS.—*Subnitrate* is quoted 3s. 6d. to 3s. 7d. per lb., according to quantity and seller, with exceptional quotations below the former figure for large contracts. *Carbonate*, 3s. 10d. to 4s. per lb. *Citrate*, 4s. to 4s. 2d. per lb. *Subchlor.*: This cosmetic bismuth is quoted 4s. to 4s. 2d. per lb. *Salicylate*: The 64 per cent. can be had at 5s. 6d. per lb.

BLEACHING POWDER—Is steady at £7 10s. per ton on the spot.

BORAX.—The Convention prices continue at £20 per ton for *crystals*, and £21 per ton for *powder*, but for good contracts there are sellers at £1 per ton below these figures.

CAFFEINE—Is in slow demand but prices are unchanged at 18s. to 19s. per lb. for the *pure* and 14s. 9d. to 15s. per lb. for the *citrate* as to quantity.

CAMPHOR.—*Crude*: a good business has been done privately for spot goods at private rates, and quotations remain unchanged at 127s. 6d. per cwt. for *China*, and 135s. per cwt. for *Japan*. Lower prices appear to be probable in the near future. *Refined* is quiet but steady.

CANTHARIDES.—*Russian*: firm at 1s. 10d. to 2s. per. lb. as to quantity. *China*: are held for 1s. per lb., demand being nominal.

CARMINE—Steady at 15s. to 30s. per lb. according to quantity and quality.

CINCHONIDINE SULPH.—Continues scarce.

CLOVES.—*Zanzibar* are a weak market, with little business doing. At sale 14 bales only were sold at 2d., over 400 bales being bought in at 2½d. for dark, up to 3d. for fine bright. For forward delivery there are sellers at about 2¼d. for January to March.

COAL TAR DISTILLATION PRODUCTS.—*Toluol*, 2s. 2d. per gal. *Benzole*, 50 per cent., 2s. 11d.; 90 per cent., 4s. 3d. per gallon. *Crude naphtha*, 30 per cent. at 120° 1s. 5d. per gallon; *Solvent naphtha*, 95 per cent. at 160°, 1s. 10d.; 90 per cent. at 160°, 1s. 7d.; 90 per cent. at 190° C., 1s. 2d. per gallon.

COCAINE.—Demand is slow at the late reduction, quotations remaining at 12s. 10d. to 16s. 3d. per oz., according to quantity and package.

CODEIA.—The *pure* is steady at 11s. 3d. to 11s. 9d. per oz. according to quantity, whilst the *citrate*, *muriate*, *phosphate*, and *sulphate* salts are quoted 1s. per oz. less.

COLOCYNTH.—Private sale of good *Turkey* at 2s. 3d. per lb., and of good *Spanish*, at 1s. per lb.

CREOSOTE.—*Water white* of foreign make is offered at 2s. 2d. per lb. for quantity.

CREAM OF TARTAR—Dull and lower, *crystals* on spot 79s. to 80s.; for *first whites*, *powder*, 81s. to 82s. per cwt.

ERGOT—Is quiet, with but little doing. Good *German* could probably be bought at 6d., and fair *Spanish* at 7d. per lb.

GINGER.—Demand quiet, but prices fairly steady. Rough *Cochin* sold at 15s. for small shrivelled-up to 29s. for mediam and small washed: bold cut *Cochin*, 68s to 85s. *Jamaica* about 80s. *Bengal* bought in at 16s., limed *Japan* at 16s., and *African* at 23s.

GLYCERIN.—Market is quiet, the demand for the time of the year being somewhat disappointing. Best white double distilled 1260 is still quoted 70s. to 75s. per cwt., according to brand.

HELIOTROPINE.—Is now very cheap, being quoted at 24s. to 28s. per lb., but for large quantities these prices might be shaved.

LITHIA SALTS.—Market is steady at 9s. 4d. per lb. for *Carbonate* in quantity; *Citrate powder*, 5s. 6d. per lb.; *crystals*, 3d. per lb. ess.

LYCOPODIUM.—Unchanged at 1s. 5d. to 1s. 6d. per lb., according to quantity for *sifted*.

MENTHOL—Is dearer, 8s. per lb. being the general quotation for spot, whilst for arrival it is doubtful if any could be had below 7s. 6d. per lb.

MERCURIALS—Remain unchanged, *Calomel* being quoted 2s. 4d. to 2s. 8d. per lb.; *Corrosive sublimate*, 2s. to 2s. 4d. per lb.; *White precipitate*, 2s. 9d. to 3s. 1d. per lb., all according to quantity.

MORPHIA.—Very quiet and unchanged, 5s. being makers' lowest price for powdered salts in quantity, second-hand holders would, however, no doubt accept somewhat less.

MUSK.—Privately a fair business has been done at from full to dearer prices.

OILS (ESSENTIAL).—*Star Anise* quiet and tending lower. 8s. 3d. per lb. is quoted for spot. *Cassia*: 85 to 90 per cent. can be had at 10s. per lb., but 70 to 75 per cent. is in short supply and cannot be quoted. 60 to 65 per cent. is steady at 8s. 3d. per lb. *Citronella* is firmer at 1s. 4d. per lb. in tins. *Croton*: Very firm at 5s. per lb. *Cubeb*: Dull at 4s. 6d. to 4s. 9d. per lb. *Cloves*: 1s. 11d. to 2s. per lb. *Orris* (concrete): 38s. per oz. *Santal flav.*: 11s. 3d. to 12s. per lb. for English drawn, according to quantity. *Caraway*: Very dull at 5s. 6d. per lb. for *English*, and 2s. 9d. to 3s. per lb. for *Foreign*. *Cinnamon* is in good demand, its use having been lately recommended in cases of consumption. Quality is very variable, and quotations range from 1s. 3d. to 4s. 6d. per oz., whilst English drawn is quoted 7s. 6d. per oz. *Eucalyptus* is in steady inquiry, *globulus* being quoted 2s. to 2s. 2d. per lb., other kinds being cheaper at 1s. 4d. to 1s. 6d. per lb. *Cajeput*: In good demand at 3s. per original bottle. *Lavender*: *English* is quoted 90s. to 100s. per lb., whilst *foreign* can be had at 3s. to 7s. 6d. per lb., according to quality. *Peppermint*: *H. G. H.* is dearer at 7s. 6d. to 7s. 9d. per lb. *Wayne Co.* also dearer at 5s. 6d. per lb., *c.i.f. Japan*: 40 per cent. on the spot 5s. 3d. per lb., *dementholised* 3s. 10d. to 4s. per lb. on the spot. *Lemon*: 2s. 11d. to 3s. 8d. per lb., according to quality. *Bergamot*: Rather firmer as 6s. 6d. to 8s. per lb.

OILS (FIXED) AND SPIRITS.—*Linseed*: In sympathy with lower prices for the seed; this is again easier, £16 to £16 12s. 6d. being quoted according to package. *Rape* firm to rather dearer at £28 10s. to £29 for refined. *Cotton* lower at £15 17s. 6d. to to £16 10s. per ton, according to make and package. *Coco-nut* steady but unchanged at £24 for *Ceylon* and £28 for *Cochin*. *Palm* £24 10s. for *Lagos* on the spot. *Chaulmoogra* firm at 2s. 6d. to 2s. 9d. per lb. *Castor* very firm at again dearer rates, 44s. per cwt. being demanded for *Italian*. *Turpentine* lower, *American* being quoted 20s. 6d. to 20s. 7½d. per cwt., with higher prices for forward delivery. *Petroleum Oil* is slightly easier at 5¾d. to 5⅞d. per gallon; for *American water white*, 7d. per gallon, whilst *Russian* can be had at 5⅜d. to 5½d. per gallon. *Petroleum Spirit* is firmer at 7⅜d. to 8d. per gallon; *deodorised*, 8d. to 8¼d. per gallon.

OPIUM.—Very quiet here with but little doing. Smyrna telegraphs that 9s. has been paid for *tale quale*, and that the Americans have been buying largely; prices here rule from 8s. 9d. to 13s. 6d. per lb., according to kind and quality.

PARALDEHYDE—Is steady at 3s. 9d. to 4s. per lb., as to quantity and packing.

PHENACETIN — Remains very quiet at 4s. 9d. to 5s. per lb. Makers state that they are anxious to meet competition, which points to lower prices in the near future, although value would already appear to be very low, especially compared with price ruling for the article not so very long ago.

PHOSPHORUS.—A steady business doing. *Wedges* 2s. per lb.; *sticks* 2s. 1d. per lb.; *amorphous* 2s. 8½d. per lb.

PILOCARPINE—Is quiet. Nominally at 2s. 3d. to 2s. 6d. per gramme according to quantity, but in view of increasing supplies of raw material it is anticipated that lower prices may rule before very long.

PODOPHYLLIN.—A fair business has been done this week and prices close higher, 15s. being asked for *B.P.* quality—one maker is said to have oversold for some little time to come, and the root being so very scarce and dear, higher rates are expected. The insoluble American quality can be had at much lower prices.

POTASH SALTS. — *Chlorate*: A good quantity has been sold for the Japan market and makers are now rather firmer, quoting 4d. per lb. for delivery in London. *Prussiate* very quiet at 6d. to 6¼d. per lb. according to make. *Bichromate* steady, at 4¾d. per lb. *Bromide* steady at 1s. 6½d. to 1s. 7½d. per lb. according to maker, former price being that quoted by outside makers. *Bicarbonate* steady at 30s. per cwt. *Iodide* unchanged at 11s. 6d. to 11s. 9d. per lb. according to quantity. *Cyanide*: Competition continues keen, and for good shipping orders below 1s. per lb. would be accepted. *Permanganate*: Market quiet and unchanged, makers' prices being 72s. 6d. per cwt. for *small crystals* and 5s. per cwt. more for *large crystals*, for 10 cwt. lots for delivery; spot being still in limited supply, and somewhat higher prices are asked for same.

QUICKSILVER; Quiet, unchanged, first hand, £6 12s. 6d., and 1s. less from second-hand

QUININE—Is very quiet, nearly all the business passing being done direct with makers. Second-hand holders offer at 9⅛d. per oz. "Factory weights," but this condition is so unsatisfactory that buyers are not tempted by this low figure.

SALOL—Unchanged at 3s. 2d. per lb., with 7½ per cent. discount for cwt. lots for delivery.

SANTONINE.—The combined makers have amended their prices, quotations now being as follow:—For 2 cwt. lots, 5s. 2d.; 1 cwt., 5s. 7½d.; 56 lbs., 5s. 9d.; 28 lbs., 5s. 10½d., and smaller lots, 6s. per lb. These prices are now quite net and for the delivery of the quantities mentioned at one time.

SALICINE.—A fairly steady demand at unchanged prices, 10s. to 10s. 6d. per lb. *net*, according to quantity.

SAFFRON.—Finest quantity of *Valencia* is offered at 46s. 6d. per lb. for *new*, and 46s. 6d. per lb. for *old* crop. Other genuine but inerior qualities are to be had down to 41s. 6d. per lb. *Alicante*, 24s. to 25s. per lb.

SCAMMONY.—A small business has been done this week in *firsts*, *Virgin* at 30s. per lb., and in fine *seconds* at 24s. per lb. *Syrian lump* is offered at 15s. to 18s. per lb. *Resin* is quiet at 8s. to 8s. 6d. per lb. as to quantity, whilst *Root*, although supplies are not over-abundant, is very quiet and dull, holders asking 27s. 6d. to 30s. per cwt.

SEIDLITZ POWDER—Quiet at 60s. to 62s. 6d. per cwt., according to quantity.

SHELLAC.—The late rise in this article ha had a set back, the sales on Tuesday marking a decline of from 2s. to 5s. per cwt, mainly, however, on the blocky qualities. The supplies were large, and a good proportion was offered "without reserve." Of a total of 1234 cases offered 726 cases sold. Out of 893 cases *Second Orange* 675 cases sold, chiefly "without reserve," good bright curly at 90s. per cwt.; fair bright, 89s. to 86s.; fair bright flat *TN* at 86s.; strong curly reddish at 82s.; bright claret red at 76s. to 79s.; ordinary and part flint block at 73s. to 74s. *Garnet*: Block and blocky sold at 70s. to 71s., being very cheap. Since the auctions the market has been very depressed, and privately very few sales have been made. *TN* free orange is very scarce.

SODA SALTS.—*Crystals* are steady at 47s. 6d. per ton landed. *Bicarbonate*: 99 per cent. unchanged at £7 5s. to £8 10s. per ton, whilst quality free from mono-carbonate is steady at 17s. 6d. to 18s. per cwt. *Nitrate*: *Refined*, £8 5s. per ton on the spot. *Caustic*: 70 per cent. white is quoted £8, and 60 per cent. £7 per ton. *Hyposulphite* steady at 8s. per cwt. for good brands. *Salicylate* unchanged at 1s. 6d. to 2s. for *powder*; 2s. to 2s. 6d. per lb. for *B. P. crystals*; whilst the *physiological pure* is to be had at from 3s. 4d. to 3s. 10d. per lb., all in bulk packages and according to quantity. *Sulphite cryst.* firm at 21s. per cwt.; *recrystal.*, 27s. 6d. per cwt.

SPICES (VARIOUS).—*Capsicums*: 16 bales Coconada sold, bold red off-stalk at 18s.; small yellow, 9s.; 13 cases Japan sold, long dull red, slightly mouldy, 16s. to 16s. 6d.; and 3 bales low thin on-stalk at 6s. 6d. *Chillies* dull. Of 405 bales Zanzibar, 20 bales offered without reserve fetched 30s., the rest being bought in at 35s. to 48s. Twenty bags Sierra Leone good fair red sold at 35s. *Cassia Lignea* bought in at 35s. to 36s. *Cassia vera* at 22s. *Cinnamon*: 23 bags Ceylon sold, broken, quill 10d.; quillings, 7½d. to 8d. *Mace*: Steady. *Nutmegs*: Quiet. 39 cases *Penang* bought in, 66's at 2s. 10d.; 81's at 1s. 9d.; 49 half cases *Banda* sold, 85's at 1s. 7½d.; 115's at 1s. 1d.; 163 packages *West India* sold at irregular and easier rates. *Pepper*: Dull. 667 bags *Singapore* bought in at 2⅜d. to 2½d., except 50 bags, which were sold at 2⅞d.; 382 bags *Acheen* bought in at 2⅛d. to 2⅜d. *White pepper* in sale, *Penang* fetched 3⅞d. to 3½d.; *Singapore* bought in at 4⅛d. to 4½d. *Pimento*: Steady at 2⅛d. to 2½d.

SUGAR OF MILK—Is very firm at 65s. to 78s. per cwt., according to quality and holder.

SULPHUR—Is exceedingly scarce on the spot, and no quotations can be obtained for the article in this position. For arrival *roll* is quoted £5 17s. 6d. per ton, and *flowers* at £6 5s. per ton.

SULPHONAL.—Price is nominally 16s. 6d. per lb. There are, however, sellers somewhat below this price.

TERRA JAPONICA.—*Cutch*: Business continues dull and limited at late rates. *Gambier*: Privately the market is very dull, and at auction the whole of the offerings were bought in.

THYMOL—Is dull and in slow demand, although the price of 6s. 9d. per lb., at which the article can now be bought, is very cheap.

TURMERIC—Is steady. Fair sales of *Cochin* have been made of fair to fine finger at 8s. to 10s. per cwt. *Bengal*: 8s. 3d. to 8s. 6d. per cwt. for ordinary to fair. *Madras*: Fair bright finger held for 9s. 6d. per cwt.

VERATRIA.—The chemically pure *P.B.* is now quoted at 6s. 3d. to 6s. 9d. per oz., according to quality.

WAX (JAPAN)—Quiet, but steady, good white squares on the spot being quoted 52s. per cwt.

The following are the particulars of Thursday's drug sales:—

ALOES: *Cape* slow of sale and rather easier, bright hard bought in at 22s. 6d., rather drossy sold at 18s. 6d. to 20s. 31 boxes *Curacoa*, part sold at 33s. to 34s. per cwt. for very fine livery, and 27s. per cwt. for rather dark. *Socotrina*: The whole stock of good quality in first hand has been sold privately at 80s. per cwt., and higher prices will probably now have to be paid.

CAMPHOR (CRUDE).—Sixty-five cases sold, dirty and part badly damaged, at 107s. 6d. Twenty-two cases very badly damaged fetched 100s. per cwt.

BALSAMS.—*Capivi* bought in at 2s. 2d. *Peru* at 7s. 6d. per lb.

BARKS. — *Cascara sagrada*: 68 bales held for 16s. 6d. per cwt. *China*: 7 bales *yellow* sold at 6d. 8 bales *Maracaibo* at 5d. for 3 CCD and 4½d. for bad ditto.

BEANS.—*Calabar*: 20 bags of fair quality sold cheaply at 2d. per lb. *Tonquin*: 6 cases fair frosted held for 1s. 9d., small slightly mouldy fetched 1s. 6d. per lb.

CANTHARIDES.—Two cases *China* sold prior to sale: remainder held for 1s. per lb.

CARDAMOMS—Sold at a decided reduction, fairly large arrivals having taken place during past few days, which, although bought *c.i.f.*, will no doubt come up for sale. Thirty-one cases *Ceylon* sold at 3s. 2d. to 4s. 6d. per lb., according to quality, colour, etc. Of 14 packages fine bold pale shelly were held for 6s.; 2nd size bought in nominally at same figure, tangibly less would, however, no doubt be accepted. Small pale *Mysore* sold lower at 4s. 3d. to 4s. 7d. per lb.; very small do. at 3s. 4d. to 10s. 7d. Good *Seeds* sold at 4s. 6d. per lb. It is stated that a parcel of *wild Cardamoms*, which description has been very scarce for some time past, has just lately arrived, and will shortly be offered, and for which it is anticipated that full prices will be paid. Medium shelly *Malabar* are quoted to arrive 2s. 8d. per lb. *c.i.f.*

CASTOR OIL.—10 cases *Italian* held for 4½d. per lb.

COLOCYNTH.—Fine whole, pale *Turkish* apple realised the very full price of 2s. 1d. per lb.; small apple, 1s. 11d. 10 cases fair *Spanish* held for 1s. per lb. Pulp, very fine pale *Turkish* with a few seeds sold at 8s. per lb., but the lot only consisted of 8 lbs. weight; fair bright sold at 5s. 6d. per lb.

CROTON SEEDS.—7 bags sold at 82s. 6d. per cwt. which is rather dearer.

DRAGON'S BLOOD.—3 cases very dull saucer sold at 80s. to 82s. 6d. per cwt.

ERGOT OF RYE.—3 bags *Spanish* wormy and slightly mouldy were held for 7d. per lb.

GUARANA.—2 cases held for 1s. 11d. per lb.

GUMS.—*Benzoin*, ordinary seconds. *Sumatra* held for £7; fair seconds fetched £7 15s. per cwt., which is rather lower. Small free grain *Siam* held for £16, fair *Palembang* for 95s., low ordinary sold s/a at 25s. per cwt. *Arabic*: Good grain was held for £7 to £8 per cwt.; hard and soft sorts at 90s. Twelve cases hard *East Indian* at 45s.; 11 bales mixed hard and soft held for 65s. *Accroides*: Twenty cases, part good bright re-melted, held for 27s. 6d.; part natural drossy for 12s. 6d. per cwt. *Tragacanth*: Six cases held for £15 per cwt. *Ammoniac*: 1 case fair drop blocky held for 55s.; 2 cases good clean sold at 65s. *Guaiacum*: Good glassy broken sold at 1s. 6d. per lb. *Gamboge*: Of 27 cases fair part sold cheaply at £6 15s. to £8 2s. 6d. per cwt. *Myrrh*: Fair sorts held for 50s. per cwt. *Sandarac*: Four casks sold at 19s. per cwt. for rather dark. *Elemi*: Twenty-eight cases dirty white held for 25s. per cwt., which shows a somewhat firmer market.

HONEY.—Two half-barrels *Jamaica* sold at 24s.; 20 cases fine *Californian* held for 37s. 6d.; 5 cases good *Italian* for 40s. per cwt.

IPECACUANHA.—Good *Carthagena* was held for 4s. 2d. per lb.; 8 bags dull sold at 3s. 8d. to 3s. 10d. for 2 and 3CCD. Of 15 bales fair *Rio* part sold at 1CCD at 5s. 6d. to 5s. 8d., which is rather easier.

JALAP.—18 bales good small heavy held for 6¾d. per lb. Of 25 bales of fair heavy, the damaged sold at 5½d., the sound being held for 6½d. per lb.

KAMALA.—There was no bid for 6 cases somewhat dingy in colour, and rather dusty.

KOLA NUTS.—9 packages good fairly bold *African* held for 7d., smaller for 6d. per lb. 4 bags good bright bold bought in at 10d. 2 bags fair bright sold at 4d. per lb. For *San Domingo* there was no bid.

LEAVES.—*Buchu*: Good green rounds sold at 3½d. per lb.

MUSK.—Three tins small to bold *Tonquin*, thin skin, blue, several broken, rather damp and some unsightly held for 85s. per oz.

ORANGE PEEL.—7 cases held for 6½d. lb.

RHUBARB.—Small flat *high-dried* fair colour was bought in at 10½d.; bold pinky grey, one quarter dark and somewhat wormy *Shensi* being held for 1s. 6d.; fair medium, even pink and grey fracture *Canion* bought in at 1s. 1d., bold flat medium *Canton* at 1s., while 5 cases flat dull coated, *high-dried*, even grey fracture sold very cheaply, without reserve, at 8d.

ROOTS.—*Scammony*: 56 bags held for 35s. 6d. per cwt. *Cuscus*: 25 bales cleaned were held for 30s. per cwt. *Rhatany*: 2 bales held for 4d., 1d. only being bid. *Colombo*: 5 bags good bold washed sold at 37s. per cwt.

SARSPARILLA—6 serons *Honduras* held for 1s. 2d. per lb.; 16 bales *Jamaica* sold 1CCD at 1s. 7d. per lb. 19 bales *Lima* sold at 1s. to 1s. 1d., remainder taken out at 1s. 3d. per lb.

SENNA.—*Tinnivelly* all sold at somewhat lower prices—small leaf, 1¼d. to 1½d. to 3½d. for good green—the offerings being very large, and in view of this result it is not expected that such large quantities will again be rushed forward for sale on one day.

STICKLAC.—4 cases bought in at 40s. per cwt.

STROPHANTHUS SEED.—No bid for inferior brown *Kombe*.

VANILLOES.—619 packages which were advertized for the drug sale will be offered on Friday morning.

VERMILLION.—17 cases *Chinese* held for 2s. 4d. per lb.

WAX.—Three barrels good *Jamaica* sold at £8 per cwt., one case at £8 7s. 6d. Fair *Australian* realised £6. Fair *Madagascar* bought in at £6 10s. *San Domingo* held for £6. Of 20 cases *bleached Calcutta*, 10 cases sold, dirty, without reserve, at £6 to £6 2s. 6d. Fair *Mogadore* was bought in at 90s. 24 bales good *Spanish* held for £7. 10 cases *Japan* held for 50s.

NEWCASTLE REPORT.

NOVEMBER 24, 1896.

Chemical trading matters are lapsing into quietness afresh. Some minor annual contracts are reported at old figures. Sulphur and alkalies remain scarce. Saltcake steady. A shade more doing in South Durham salt. Prices are:—*Sulphur*: £5. *Soda ash*: 52 per cent., £4 5s. *Saltcake*: 20s. *Alkali*: £4 17s. 6d. to £5 7s. 6d. *Bleaching powder*: £6 10s. to £7 10s. *Caustic soda*: 70 per cent., £7 2s. 6d. to £7 10s. *Soda crystals*: 37s. 6d. to 45s. *South Durham salt*: 9s. per ton *f.o.b.*, *Tees*.

MANCHESTER REPORT.

NOVEMBER 24, 1896.

The market here is rather quiet and with few changes to note. In heavy chemicals this is especially the case, and although some minor articles are weaker, the recent advances in several have been maintained. *Sulphate of copper* continues firm at the recent advance to £17 10s. per ton for best brands, delivered here. *Brown acetate of lime* is also firm at £4 10s. per ton for *Welsh*, delivered Manchester. *Naphthas* are dull and lower. *Solvent wood* is quoted as ow as 2s. 8d. and *miscible* (white colourless) remains at 3s. *Bicarbonate of soda* is firm at £6 15s. to £7 for one cwt. kegs, and *Industrial bicarbonate* (for mineral waters) £5 5s. to £5 10s. per ton, kegs. *Chlorate of soda* is fairly firm at 5d., both home and export account. Lancashire makers of *Yellow prussiate* have at length succumbed to the competition of foreign makes, and are now quoting 6d. generally, though a trifle lower would be accepted for a quantity. *Aniline salts and oil* unchanged. *Green copperas*

EXCHANGE—OFFERS AND WANTS.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Books, etc.

'Manual of Physiology' (Dr. Carpenter's), cost 12s. 6d., accept 5s. 6d., real splendid offer. Hoblyn's 'Dictionary of Medicinal Terms,' useful book, 3s. 'Science Siftings,' 26 numbers, just out, 2s. Post free.—Ault, Alfreton.

For Sale.—Complete set vols. 'Pharmaceutical Journal,' third series, bound half calf, 23 vols. What offers?—M.P.S., Literary and Philosophic Club, Berkeley Square, Bristol.

Wills' 'Materia Medica,' 8s.; what offers for Ganot's 'Natural Philosophy,' Henfrey's 'Botany,' both new?—N., 7, Palmerston Street, Montrose.

A book of 130 Well-tried Recipes for Chemists and Druggists, comprising well-selected formulæ for general, remedial, veterinary, toilet, and everyday preparations. Post free, 1s. 6d.—Tully, Chemist, Hastings.

OFFERED—(*continued*).

Free.—Withering's 'Arrangement of British Plants,' plates, 4 vols., calf, fine copy, 7s. 6d., published £2 8s. unbound; 'Medical Botany,' two large vols., 138 coloured plates, 17s. 6d., published £4 4s. —Davis, "Chestnuts," Gordon Hill, Enfield.

Photographic Apparatus.

"X" Ray Fluorescent Screens, 5 by 4, 2s.; 6½ by 4¾, 3s.; 8½ by 6½, 5s.; 10 by 8, 6s. Fluorescent Cyanide for making your own screens, 5s. per ounce. —Pickering, Chemist, Leicester.

Miscellaneous.

Microscope, by Parkes, first-rate condition, objectives 1 in. and ¼ in., bull's-eye condenser, mahogany case, 2 doz. first-rate slides. £5, or offers.—Gauld, 6, Aughton Street, Ormskirk.

Magic Lanterns, second-hand; Wrench's telescopic triple and biunial; Ladd's oxyhydrogen microscope; grand biunial patent pamphengos oil; lantern, gives 14-ft. picture; slides and effects,

OFFERED—(*continued*).

bargains; illustrated list post free, 2d.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

Hooper's Air and Water Bed, combined, large size, 6 by 4½ feet, cost £19, includes bellows, sheeting, box, good condition, little used. What offers?—Goodess, Chemist, Leicester.

For Sale.—A 50-cells Leclanché Medical Battery, in good condition, only requires re-charging; what offers? Quick sale.—Myrrh, 'Pharm. Journ.' Office, 5, Serle Street, London, W.C.

Great bargain for beginner or branch; about 200 gold-labelled shop-rounds and jars, with part contents; also stock of dispensing drugs, chemicals, and sundries; low price for immediate sale; declining business; detailed schedule on application.—Goodwill, Chemist, Scarborough.

Two very fine window show-jars with glass caps, and circular gilded stands on octagonal mahogany bases, labelled inside Royal and Pharmaceutical arms; total height 51 in., diameter 20 in.; what offers?—Wardley, Tonbridge.

easier. *Sulphate of ammonia* has slackened off, and the figure may be said to be £7 17s. 6d., Leith, with £8 10s. asked for spring delivery. *Pitch*: Flat. *Glauber* and *Epsom salts*: Unchanged.

LIVERPOOL REPORT.

NOVEMBER 25, 1896.

BEESWAX.—Twenty sacks *Californian* at £6 10s. per cwt., and 32 packages of *Gambia* at the same price have been reported.

BICARBONATE OF SODA—Is selling at £7.

BORAX.—20s. per cwt.; 21s., *powder*.

BLEACHING POWDER.—£6 15s. to £7.

CANARY SEED—Continues to sell fairly well at 28s. 6d. to 29s. per 464 lbs. for *Turkish*; about 460 bags are reported sold *ex store* at 28s.

CAUSTIC SODA.—70 per cent., £7 10s. per ton; 60 per cent., £6 10s.

CHLORATE OF POTASH: 4d. to 4⅛d. per lb.

COPPERAS—Still maintains its recent advance—viz., *Lancashire* 38s. *Welsh* 36s.

CREAM OF TARTAR—Has been offering at 81s. per cwt., but no sales are reported.

GUINEA GRAINS.—A small lot of 10 bags sold at 15s. 6d. per cwt.

HONEY.—Sales of *Pile X Chilian* have been effected at 26s. per cwt., and about 112 cases *Californian* at 22s. 6d., 28s. 6d., and 32s. per cwt., according to quality.

KOLA NUTS—Have been sold in small quantity at 3½d. per lb. for dried.

LINSEED—Scarce, and held for higher rates.

OILS (FIXED) AND SPIRITS.—*Castor oil* is very firm at 3¾d. per lb. for *Calcutta*, 3⅝d. for *Madras*, and 3 9/19d. to 3⅝d. for *French*, first pressure. A lot of *Belgian* in barrels, which has been offering for some time has been disposed of. *Olive oil* continues to maintain its late advance. *Malaga* and *Seville* oils have been selling well, the latter at £29 per tun. *Neapolitan* oil has advanced 15s. per tun abroad. *Linseed oil*, *Liverpool* pressed, has gone down to 17s. and 18s. 3d. per cwt. *Cottonseed oil* remains at last week's figures for both *Liverpool* and *American*. *Spirit of turpentine*, 3d. per cwt. easier, selling at 21s. 3d.

POTASHES—Have dropped to 21s. per cwt.

PEARLASHES.—32s. 6d. to 35s. per cwt.

PIMENTO.—40 bags of *Jamaican* were sold on private terms.

PRUSSIATE OF POTASH—Is firm at 6¾d.

CAMWAL.

The annual meeting of the Chemists' Aerated Mineral Waters Association, Limited, was held at Anderton's Hotel, Fleet Street, E.C., on Tuesday, November 24, Mr. Horace Davenport (Chairman) presiding.

The Chairman, on rising to move the adoption of the report and balance sheet, spoke of the large increase of shareholders during the year (662), and of the largely increased trade of the Association, owing to which it had been resolved to erect new factories at Birmingham and Manchester, and also to enlarge the existing works. This had necessitated a considerable increase in the capital, which accounted for an apparent falling off in the results. He also referred to the fact that last year, through the generosity of the shareholders, the directors had been enabled to present the Benevolent Fund of the Pharmaceutical Society with £50 in shares, so that as long as Camwal existed their poorer brethren would be sure to get some benefit. The report and balance sheet were adopted, and it was also agreed that a dividend of 10 per cent. for the year ending September 30, 1896, and a bonus of 2½ per cent. be declared.

Messrs. H. Davenport and J. H. Wilson were re elected to the positions they had previously held, and Mr. Kemp, Local Secretary of the Pharmaceutical Society for Manchester, was elected on the Board of Directors. Votes of thanks were accorded to the Chairman and Directors, the Secretary, Managers, and staff for their services.

It was agreed, on the motion of Mr. Brough, that a further sum of £50 be given to the Directors to do as they liked with. He was sure that they had done well with the previous £50, and they would probably do the same with this.

DIARY OF THE WEEK.

SATURDAY, NOVEMBER 28.

PHARMACEUTICAL FOOTBALL CLUB *v.* Earlsfield Ramblers, at Garrett Green. Kick off at 3 p.m. Train from Waterloo (S.W.R.) to Earlsfield Station at 2.17.

TUESDAY, DECEMBER 1.

BRADFORD AND DISTRICT CHEMISTS' ASSOCIATION.
"Should Doctors Dispense?" Affirmative, Mr. Silson; negative, Dr. Dunn.

WEDNESDAY, DECEMBER 2.

BRIGHTON JUNIOR ASSOCIATION OF PHARMACY, at 9 p.m.
Social and Musical Evening.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION, at 9 p.m.
Musical and Social Evening.

PHARMACY CLUB, at 6.45 p.m.
Meeting at the Café Royal.

THURSDAY, DECEMBER 3.

CHEMICAL SOCIETY, at 8 p.m.
Miscellaneous Papers.
Ballot for Election of Officers.

CHEMISTS' ASSISTANTS' ASSOCIATION, at 7.30 p.m.
Cinderella Dance at Portman Rooms, Baker Street, W.

GLASGOW AND WEST OF SCOTLAND PHARMACEUTICAL ASSOCIATION, at 9.15 p.m.
Debate: "Is the P.A.T.A. Worthy of the Support of Retail Chemists?"

PROPRIETARY ARTICLES TRADE ASSOCIATION, at 3.30 p.m.
Meeting at the North Staffordshire Hotel, Stoke-on-Trent. Mr. J. Averill in the chair.

FRIDAY, DECEMBER 4.

ABERDEEN JUNIOR CHEMISTS' ASSOCIATION.
"Respiration," by A. T. G. Beveridge.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION, at 9 15 p.m.
"Uniformity in Pharmacy," by C. F. Henry.
"Botany in December," by J. R. Hill.

SCHOOL OF PHARMACY STUDENTS' ASSOCIATION.
"Concentrated Infusions," by Wilfred Lean.

LATE ADVERTISEMENTS.

Engagements Wanted.

IN Brighton.—LOCUM TENENS Work. Qualified. London and Continental experience. Highest refs. VINGT, 5, Serle St., W.C.

QUALIFIED, desires MANAGERSHIP. 28. Single. Good references. Experienced. CHEMICUS, 96, Mornington St., Keighley.

Market Report

And Prices Current of Drugs, Chemicals, Oils, and Seeds.

The quotations here given are in all cases the lowest net cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

[Specially Compiled for the 'Pharmaceutical Journal.']

LONDON REPORT.

DECEMBER 3, 1896.

Business has been by no means active this week, while prices for some articles show a lower tendency. The expected good demand from America has so far by no means been fully realised. This is probably—partly at least—owing to the approach of the stock-taking season, which, in the absence of any special reasons for making immediate purchases, has no doubt tended to induce buyers to hold their hand, or at least to confine themselves to covering their pressing requirements, and even then only from hand to mouth. Shellac has weakened on advice of large shipments. Quinine neglected, morphia and codeia dull. Opium unchanged. Cocaine quiet. Saffron steady, acid citric, and tartaric, and cream of tartar tending lower. Camphor, both crude and refined lower, English refiners having this week reduced their price 1d., while German makers have gone down 1½d. per lb. Carbolic remains very firm. Eucalyptus oil in better demand in consequence of reported prevalence of influenza. Menthol is firmer, and thymol expected to be dearer in consequence of scarcity and dearness of raw material. Gentian root very firm at advancing rates.

ACID CARBOLIC.—Prices remain exceedingly firm at 7d. per lb. for 35° to 36° *ice crystal* in 2½-cwt. drums and overcasks; 39° to 40° *ice crystal* being quoted at 7¾d.; and 39° to 40° *detached crystals* 9d. per lb. for bulk packing and for quantity. *Crude*: 60°, 2s. 2d.; 75°, 2s. 7d. per gallon. *Liquid*: 1s. 1d. per gallon.

ACID CITRIC—Very dull at 1s. 1¼d. to 1s. 1½d. per lb. for *crystals*.

ACID TARTARIC—Weak, with sellers of *English* at 12½d. per lb. for *crystals*, and 12d. per lb. for *foreign*.

ALOES.—There have been several inquiries this week for good *Socotrine* in *kegs*, but there only a few second-hand sellers at 90s. to 100s. per cwt., and in tins at 60s. per cwt. It would appear that higher prices are very probable.

ALUM.—*Lump*, £5 7s. 6d. to £5 10s. per ton; *ground*, £5 15s. to £6 per ton.

AMMONIA COMPOUNDS.—*Carbonate* is steady at 3d. per lb. in *casks*, 3⅛d. per lb. in *kegs*, and 3¼d. per lb. in *jars*. *Sulphate* is very dull. Grey prompt 24 per cent. London, £7 15s. per ton; Beckton terms prompt £7 10s. per ton. *Sal ammoniac*: Firsts sublimed, 37s. 6d.; seconds, 35s.; crushed, 37s. to 39s.; powdered, 39s. to 41s. per cwt.

ARRAROBA—Is arriving more freely, and holders would be willing to accept much lower prices. The quality of some of the parcels is better than has been seen for some time past.

ARSENIC.—*White lump*, 28s. to 29s. per cwt.; *powder*, 23s. 6d. per cwt.; *red*, 28s. to 30s. cwt. in 1-cwt. kegs.

ASAFŒTIDA.—There are many enquiries, but at the moment buyers will not pay the prices asked. The demand is mainly for the lower qualities. The statistical position, as will be seen from the monthly statement given in this issue, is very strong. Quotations nominally 50s. to 90s. per cwt. according to quality.

BENZOIN.—Small sales ex last week's sales at £5 5s. for fair almondy *Sumatra* brown sides and ends.

BORAX.—*Crystals* are quoted £20 per ton, and *powder* £21 per ton; but there are still a few parcels to be had slightly below these figures.

CAFFEINE.—Unchanged at 18s. per lb. for the *pure* in cwt. lots. *Citrate*: 14s. per lb.

CAMPHOR.—The market for *Crude* is exceedingly dull; several shipments are about due, and holders are unable to place them. For December to February shipment ther are sellers of *China* at 110s., and of *Japan* at 120s. per cwt., *c.i.f.* terms, but no buyers. For the *Refined* lower quotations have been made this week, the English refiners having reduced their prices for Bells to 1s. 7d. per lb. for quantities under half a ton, 1s. 6½d. per lb. for lots between half and one ton, whilst for ton lots and over 1s. 6d. per lb. is asked—a reduction of 1d. per lb. The German refiners have reduced their prices 1½d. per lb., and are consequently ½d. per lb. below the figures given above.

CINNAMON.—At the quarterly sales held on Monday 1400 bales *Ceylon* were offered, as against 2817 bales offered same time last year. A good demand prevailed, and nearly the whole was disposed of, ordinary to medium qualities at an advance of ½d. to ¾d. lb., and good to fine at an advance of from 1d. to 3d. lb. Fine superior *quill*, 1s. 4d. to 1s. 7d.; fair, 1s. 1d. down to 9½d. per lb. for low. *Chips* were slow of sale: Ordinary coarse, 2⅞d. lb.; good, 3¾d. per lb. Fine *quillings* and *cuttings*, 9d. to 10d. lb. At the spice sales on Wednesday 414 bags ordinary coarse *chips* sold without reserve at 2¾d. to 2⅞d. per lb.

COAL TAR DISTILLATION PRODUCTS.—*Toluol* 2s. 2d. per gal. *Benzole*, 50 per cent., 3s. per gal., 90 per cent., 3s. 7d. per gal. *Crude naphtha*, 30 per cent., at 120° C., 1s. 6d.; *Solvent naphtha*, 95 per cent., at 160° C., 1s. 10d., 90 per cent. at 160° C., 1s. 7d. per gal.; 90 per cent., at 190° C., 1s. 2d.

COCAINE.—Very quiet. Makers' price remains 12s. 10d. per oz. for 100-oz. lots, for the *hydrochlorate*.

CLOVES.—The tendency is still downwards, with hardly any business doing. Of 210 bags *Zanzibar* offered in auction 20 bags only sold at 2⅛d. There are sellers for Jan.-March at 2⅛d. to 2¼d.

COD-LIVER OIL—Is very quiet. There are sellers of *Norwegian* at 140s. to 160s. per barrel, according to brand and holder, whilst *Newfoundland* is quoted 5s. to 6s. per gallon, as to quality.

CODEIA.—Unchanged at 11s. 6d. per oz.

CREAM OF TARTAR—Again lower. First white *crystals* 78s. per cwt., whilst *powder* is quoted 80s. to 81s. per cwt. as to holder.

ERGOT OF RYE.—Sound *Russian* is offered at 6½d. per lb. *c.i.f.* terms.

GALLS.—A small business has been done in *blues*, at 48s. to 49s, and in *greens* at 40s. to 44s. per cwt.

GENTIAN ROOT—Continues to advance, business having been done this week at rising prices, and closing very firm at 32s. per cwt. for good quality.

GINGER.—A flat market, and prices rather easier. About 300 bags rough *Cochin* sold at 30s. to 32s. 6d. for ordinary to good washed, mouldy, 27s. 6d.; low dusty cuttings, 12s.; *C cut* bought in at 40s., *B cut*, 65s. 70 bags *Bengal* sold at 14s. 6d. 100 bags limed *Japan* partly sold at 15s. to 16s.

GLYCERIN.—Very quiet, with but little doing. Makers' prices remain unchanged at 70s. to 75s. per cwt. for best, white double distilled in tins and cases.

GUM TRAGACANTH.—Transactions have been on a very limited scale, but prices remain firm. *Firsts*: £14 to £15; *seconds*: £12 10s. to £13 10s.; *thirds*: £11 to £12 per cwt., with lower quotations for inferior.

MENTHOL—Is very firm at 8s. per lb. on the spot, and 7s. 9d. per lb. for arrival.

MORPHIA.—There is no change to report. Makers' lowest price remains 5s. per oz. for *Hydrochlorate powder* in quantity; there

are, however, second-hand sellers at somewhat below this figure.

OILS (ESSENTIAL).—*Star aniseed*: Business has been done this week for at 6s. 3d. to 6s. 4d. per lb., *c.i.f.* terms, for December-January shipment, but a firmer tone has since prevailed, with higher prices from China, 6s. 5d. per lb., *c.i.f.*, being now asked, it being stated that the China market has been cleared. On the spot 8s. per lb. is the price; there is, however, but little doing, while arrivals are coming in freely. *Cassia*: Dull; 70 to 75 per cent. is scarce, and 9s. per lb. is asked for the latter. To arrive 70 per cent. is quoted 6s. 3d. to 6s. 6d. per lb., *c.i.f.* *Citronella* is quoted 1s. 2½d. to 1s. 3d. per lb. on spot, and 1s. 1d. to arrive both in drums. *Lemon grass*: 2¼d. to 2½d. per oz. is quoted for spot. *Eucalyptus*: In better demand in consequence of the renewed prevalence of influenza (happily this time generally in comparatively mild form). Ordinary is worth 1s. 4d. to 1s. 5d. per lb., for *Risdonia globulus* 1s. 9d. per lb. is asked, and for best *genuine globulus* 2s. 3d. to 2s. 6d. per lb., for quantity and in bulk, according to brand and holder.

OILS (FIXED AND SPIRITS).—*Castor* continues very firm. *E. I. seconds* at 3½d. per lb., and *firsts* at 4d. per lb. *Italian*, 44s. to 45s. per cwt. *Linseed* is again weaker at £15 10s. to £16 2s. 6d. on the spot, according to package. *Rape* slightly easier at £28 to £28 10s. on the spot. *Cotton* very dull, and but little doing. *Refined* is quoted at £15 10s. to £16 10s., according to make and package. *Cocoanut* quiet and unchanged at £24 for *Ceylon* and £28 for *Cochin*. *Palm*: Lagos on the spot £24. *Turpentine* lower; American on the spot 20s. 1½d. per cwt.; for forward delivery, January-April, 20s. 7½d. per cwt. *Petroleum Oil*: This market is very dull, and lower prices are noted. *American* on the spot 5½d. to 5⅝d. per gallon; Water White, 6¾d. to 6⅞d. per gallon. *Russian*, 5⅛d. to 5⅜d. per gallon on the spot. *Petroleum Spirit* steady at 7¾d. to 8d. per gallon for *American*; deodorised, 8d. to 8¼d.

NUX VOMICA.—Rather more inquiry, but we do not hear of any actual business. Nominal quotations, 6s. to 7s. 6d. per cwt. for good, and 4s. 6d. to 5s. 6d. per cwt. for common.

OPIUM.—Market remains quiet, values being unchanged at 7s. to 8s. 6d. for manufacturing, 9s. 6d. to 10s. 6d. for druggists', and 11s. 6d. to 13s. 6d. for soft shipping.

PILOCARPINE—Is tending still lower, 2s. 3d. per grm. being now quoted for the *hydrochlorate* and *nitrate* salts.

PODOPHYLLIN.—15s. per lb. is the general quotation for B.P. quality, although a small quantity might still be obtainable at rather less.

POTASH COMPOUNDS.—*Chlorate*: Firmer at 4d. per lb. on the spot. *Prussiate*: Steady at 6d. to 6¼d. per lb. *Bichromate*: Unchanged at 4¾d. per lb. *Bicarbonate*: 30s. to 31s. per cwt. *Oxalate* (neutral): 4¾d. to 5d. per lb. *Caustic*: 60 to 65 per cent., £8 10s. per ton. *Cyanide*: 98 to 99 per cent., 1s. per lb., with slightly lower prices for large orders. *Permanganate*: Small crystals are quoted at 70s. per cwt., large crystals being 5s. per cwt. more for 10-cwt. lots.

QUICKSILVER.—Unchanged at £6 12s. 6d. per bottle from first-hand, and £6 11s. 6d. from second-hand holders.

QUININE.—Quiet, with but little doing, makers' prices for *Sulphate* remaining 9½d. per oz for German, and 10d. per oz. for English in quantity and in bulk, second-hand German *factory weights* being quoted 9¼d. per oz.

SAFFRON.—Unchanged at 47s. 6d. for finest new, while finest old is held for 46s. 6d. per lb.

SALTPETRE.—English refined *crystals* steady at 21s. 3d. to 21s. 6d. per cwt., *powder* being 2s. per cwt. more.

SCAMMONY.—A moderate business has been done in *firsts* at 27s. to 30s., and in fine *seconds* at 24s., and lower quality at 16s. per lb.

SHELLAC.—This market has become exceedingly flat owing to advices from Calcutta of large shipments to the United Kingdom during the past fortnight, the quantity for the month being 15,300 cwt., against 9400 cwt. last year. These advices have quite stopped business for arrival, but, on the other hand, importers are content to wait and do not press for sale. Nominal quotations, 79s. to 80s. per cwt. for December to February steamer for *TN* quality. At Tuesday's auctions the supplies were moderate, but demand was slow, and very little sold at a decline of 2s. per cwt. on last sale's rates for *Second Orange*. A total of 794 cases offered, and 189 cases sold, these being *Second Orange*, good bright, at 87s. to 88s. per cwt.; fair bright red blocky at 75s.; curly red, part hard block, at 74s. per cwt.

SNAKE ROOT.—Steady at 1s. 1d. to 1s. 2d. per lb., according to importer.

SODA COMPOUNDS.—*Crystals*: 43s. 6d. per ton ex-ship, London. *Bicarbonate*: 7s. 3d. to 7s. 6d. per cwt. for 99 per cent.; free from mono-carbonate, 17s. 6d. to 18s. per cwt. *Caustic*: 60 per cent. white, £7 10s. to £8 per ton; 70 per cent., £8 5s. to £8 10s. per ton. *Hyposulphite*: £6 5s. per ton. *Refined Alkali*: 58 per cent., £5 5s. per ton.

SPICES (VARIOUS).—*Capsicums*: Forty-four packages long red Japan bought in at 18s. Of *Chillies*, a few bales Zanzibar were sold, fair bright at 36s., but the greater part were bought in at 35s. to 37s. 6d. *Mace*: West India sold at 1s. 3d. to 1s. 6d., wormy Penang 11d. to 1s. 1d.; Java bought in at 1s. 8d. *Nutmegs*: Seven boxes West India sold at 2s. 3d. for 67's, down to 11d. for 129's. *Pepper* is dull at about 2½d. *White Pepper*: 20 bags *Penang* sold at 3⅜d., rest bought in at 3½d.; 71 bags *Siam* sold at 4d.; 50 bags *Singapore* bought in at 4¼d. *Pimento*: 211 bags sold, fair ar 2¼d., good, 2⅜d.

STRYCHNIA.—Makers' prices are for *pure crystal*, 1s. 10½d.; *pure powder*, 1s. 9½d. *Nitrate*: 1s. 8d. per oz. for quantity and in bulk.

SUGAR OF MILK.—Steady, good quality *white* being quoted 70s. to 75s., according to quality and brand.

SULPHATE OF COPPER.—*First* quality is noted at 17s. 3d. to 17s. 9d. per cwt.; *seconds*, 10s. 6d. to 11s. per cwt.

THYMOL.—The raw material is said to be very scarce and is quoted at higher prices,

MONTHLY STATEMENT OF DRUGS, ETC., WAREHOUSED IN LONDON.

DECEMBER 1, 1896.

		November.		Stocks, November 30.	
		Arrivals.	Deliveries.	1896.	1895.
Aloes (all kinds)	packages	115	464	6,266	7,571
Balsams ,,	,,	28	114	616	1,383
Bark, Cinchona	,,	1,909	1,500	23 456	28,173
Quinine Sulphate	ounces	20,384	33,728	1,431,440	2,038,768
Beeswax	packages	244	586	1,612	2,628
Camphor	,,	394	1,840	12,405	16,492
Cardamoms	,,	45	160	276	944
Cochineal	,,	649	312	2,345	1,672
Colombo Root	,,	—	—	113	1,185
Cubebs	,,	—	69	480	403
Dragon's Blood	,,	3	32	72	205
Galls (all kinds)	,,	160	1,451	7,920	5,565
Gum, Ammoniacum	,,	—	—	43	90
Arabic, all kinds	,,	407	2,395	12,235	10,796
Asafœtida	,,	—	130	317	727
Benjamin	,,	538	303	3,165	1,625
Galbanum	,,	—	—	1	2
Gamboge	,,	60	33	207	161
Guaiacum	,,	—	9	44	89
Kino	,,	1	4	25	14
Mastic	,,	—	1	8	11
Myrrh	,,	15	44	606	549
Olibanum	,,	—	489	2,861	2,503
Tragacanth	,,	117	110	1,710	2,073
Ipecacuanha	,,	81	62	488	636
Jalap	,,	8	9	329	259
Nux Vomica	,,	91	21	718	1,080
Oils, Castor	,,	192	274	741	1,237
Olive	,,	67	105	957	429
Aniseed	,,	38	17	49	128
Cassia	,,	—	—	20	31
Rhubarb	,,	97	112	522	1,029
Saltpetre	tons	338	1,273	2,528	3,075
Sarsaparilla	packages	85	89	302	306
Senna	,,	858	560	2,828	2,832
Shellac	,,	3,248	6,191	33,538	23,985
Terra Japonica, Gambier	tons	887	332	1,414	666
Cutch	,,	25	56	1,627	1,755
Turmeric	,,	50	951	1,394	790

The stocks of camphor, oils of aniseed cassia and, are incomplete, some warehouses not making returns.

but demand has fallen off very much, and quotations remain at 7s. per lb.

TURMERIC—Continues quiet, with a small inquiry for *Bengal* at 8s. 6d. to 9s. per cwt. for good to fine dark fracture, and sales of good *Madras* finger at 12s. 6d. to 13s. per cwt.

VANILLA.—At the sales on Friday last the large supply of 633 tins was offered, and with a good demand 550 tins sold. Prices, though irregular, showed but slight change compared with the October sale. Prices ranged from 12s. to 32s. 6d. per lb. as to length and condition.

WAX (JAPAN)—Is very quiet, with but little business doing. For arrival there are sellers at 40s. per cwt. *c.i.f.* Nov.-Jan. shipment.

NEWCASTLE REPORT.

DECEMBER 2, 1896.

The local trade is somewhat duller. Exports are fewer owing to the advancing shipping season. Prices are not much changed and are as follow:—*Bleaching powder*: £6 10s. to £7 10s. *Soda crystals*: 37s. 6d. to 45s. *Caustic soda*: 70 per cent., £7 5s. to £7 10s. *Soda ash*: 52 per cent., £4 5s. *Alkali*: 52 per cent., £5 5s. *Sulphur*: £5 per ton.

MANCHESTER REPORT.

DECEMBER 2, 1896.

Heavy chemicals have a quiet tendency, and there are no changes. On the whole, prices of alkalies are fairly maintained. The most important advances have been in sulphate of copper and brown acetate of lime, the former being quoted £18 per ton for prompt delivery here and the latter £5 per ton for *Welsh* at station, Manchester, and £4 17s. 6d. *ex* ship, quay Manchester docks. *Sulphate of ammonia* remains nominal, and is at £7 11s. 3d. to £7 12s. 6d., *Leith;* £7 15s. for *Lancashire, f.o.b.* Liverpool. *Solvent wood naphtha* is in poor request here, and *solvent wood* is quoted 2s. 7d. to 2s. 8d., and *miscible* (white colourless) 2s. 11d. to 3s. *Saltcake* is steady at 20s. to 22s. per ton in bulk on rails. A brisk inquiry has sprung up for *Green copperas*, and some large contracts have been made for delivery over next year at 36s. per ton *f.o.b.* Liverpool, and 31s. *f.a.s.* Manchester. *Chlorate of soda* dull at 5d. for most points of delivery. *Arsenic* is in strong request and firm at late rates. *Pitch* remains dull, and sellers are more disposed to meet buyers. *Alum* unchanged. *Epsom salts* easy at 55s. to 57s. 6d. per ton, bags; and *Glauber's*, 25s. to 27s. 6d. In *Vitriol* and *Muriatic acids* considerable reported for forward delivery.

LIVERPOOL REPORT.

DECEMBER 2, 1896.

The chief features of the week's market, which otherwise has been somewhat dull, are the continued strong position of castor and olive oils, a reduction in price in linseed and cottonseed oils, a slightly easier rate for spirits of turpentine, and some small transactions in Teneriffe cochineal.

BICARBONATE OF SODA.—Selling at £6 15s. per ton.

BORAX—Is in good demand at 20s. for *crystals*, and 21s. per cwt. for *powder*.

BLEACHING POWDER.—Somewhat dull at £6 12s. 6d. per ton for "hard."

CANARYSEED—Is neglected at present, and though there are sellers at 28s. 6d. to 29s. per 464 lbs. for Turkish, buyers are not tempted, and no sales are reported.

COCHINEAL.—Sales of black grain *Teneriffe* have been made at the late price, viz., 1s. 2½d. per lb.

CREAM OF TARTAR—Though still offered at 81s. per cwt., does not move off.

COPPERAS—Continues at 38s. per ton for *Lancashire*, and 36s. for *Welsh*.

COPPER SULPHATE—Has advanced to £17 15s. per ton for prompt delivery.

HONEY.—30 barrels of *Chilian* Pile X made 26s. 6d. per cwt., and some good *Californian* 30s.

OILS (FIXED) AND SPIRITS.—*Castor oil* though maintaining its recent advance as regards *Calcutta* "good seconds," is easier for the other varieties, *Calcutta* "good seconds," 3¾d. per lb.; *French* first pressure, 3½d.; *Madras*, 3½d. *Olive oil* is in good demand and selling freely, *Malaga* at £29 10s. to £30 per ton, and *Seville* £28 10s. to £29. *Linseed oil*: *Liverpool* pressed has experienced a still further fall in price, and is at 16s. 6d. to 18s. 6d. per cwt., according to quality. *Cotton-seed oil*: *Liverpool* refined is quoted at 16s. to 16s. 6d. per cwt., but *American* remains at 18s. *Spirits of turpentine* is down to 21s. per cwt.

POTASHES—Are very dull at last week's prices.

PEARLASHES—Are very dull at last week's prices.

PRUSSIATE OF POTASH—Has run down to 6¼d. per lb.

POTASH CHLORATE.—4d. to 4½d. per lb.

POTASH NITRATE.—23s. per cwt.

SAL AMMONIAC.—37s. and 35s. per cwt.

SODA CRYSTALS.—Firm at £2 7s. 6d. per ton.

SODA CAUSTIC.—70 per cent., £7 5s. to £7 10s. per ton; 60 per cent., £6 5s. to £6 10s.

NEWS IN BRIEF.

THE METRIC SYSTEM should be rendered compulsory as soon as the necessary Bill can be passed, in the opinion of the Liverpool Chamber of Commerce, which is unanimously in favour of adopting the decimal system of weights and measures.

THE PROPRIETARY ARTICLES TRADE ASSOCIATION has issued a circular to manufacturers of proprietary articles, in reply to others sent out by one or two "cutting" firms, that adversely criticised the anti-cutting movement. The objects of the Association are explained in this latest circular, and manufacturers invited to join.

EDINBURGH PHARMACY ATHLETIC CLUB.—The fifth annual Smoking Concert takes place on Monday, December 21, 1896, in the West End Café, Princes Street, at 8.30 p.m. Tickets 6*d.*, from the Secretary or members of Committee. The Running Section has made the following fixtures:—Wednesday, December 9, meet at Railway Bridge, Murrayfield, 8.30 p.m.; Tuesday, December 15, meet at Canonmills Bridge, 8.30 p.m. The pace will be adapted even to inexperienced runners, and large musters are specially asked. The Committee has arranged that, provided not less than twenty members signify their intention to attend, the Club shall have the use of Mr. F. A. Lumley's well-fitted museum on Wednesday evenings from 8 p.m. onwards. Names should be sent at once to the Secretary, Mr. J. P. Gibb, 8, Cobden Crescent, who will furnish any particulars desired.

OTTO OF ROSES is used by Messrs. Blondeau et Cie, to the extent of 5000 ounces every year, according to *Answers*. It is kept by the firm in a strong room all to itself, and is stored in flat flagons about twelve inches long and six inches in diameter, each containing £180 worth of the otto.

ALLEGED FALSE PRETENCES.—At Lichfield, on November 23, Joseph Edward Brookbank, 25, clerk, who gave as his address Queen's Road, Wimbledon, was charged with obtaining 5*s.* by false pretences from Mr. Albert Marshall, chemist. Prisoner, who is of good address and appearance, went to prosecutor's shop and represented himself as Ernest Thompson, son of a member of a London firm of wholesale chemists. He said he was going round to see if customers were properly looked up or neglected, and asked for a cheque for £11 to be cashed. When told that he could not be accommodated, he borrowed 5*s.* on an I.O.U., and left. Suspicions were afterwards aroused, and he was arrested at the railway station when about to depart by train. He handed back 4*s.* 10*d.*, and asked to be forgiven, saying that he was a gentleman by birth and education, was in great distress, and wanted to get to his relatives. He was remanded.

REYNOLDS AND BRANSON'S CRICKET CLUB held a successful smoking concert on Friday, November 13, at the Bull and Bell Hotel, Briggate. Prizes were presented to Messrs. J. H. Jackson and W. Key for best batting averages, and to Messrs. J. Davis and Geo. Jackson for bowling. Mr. Harry Goodson (Hon. Sec.) was also presented with a silver-mounted walking-stick, in recognition of his services.

THE ACADEMY OF SCIENCE OF BAVARIA.—At the personal request of the Prince Regent of Bavaria, Professor Max von Pettenkofer, the eminent scientist and director of the scientific department of Liebig's Extract of Meat Co., Ltd., has consented to fill the chair at the Academy, and to act as Keeper of the State Scientific Collection for a further term of three years. The Prince Regent has conferred upon him the title of "Excellency."

SODIUM BROMIDE was alleged to be deficient to the extent of one-fifth of the quantity prescribed, in a mixture made up by Emily Warhurst, of Liverpool. The defence was that the salt rapidly deteriorated on exposure, and that the defendant was not responsible for the deficiency. The bench thought that if the defendant undertook to sell an article up to a certain standard, she should see that it was so. Fined 5*s.* and costs.

EXCHANGE—OFFERS AND WANTS.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Books, etc.

Ince's 'Latin Grammar,' 2s. 9d.; Foster's 'Elementary Chemistry,' 2s. 6d.; Oliver's 'Elementary Botany,' 2s. 6d., latest editions, unsoiled, recommended by Pharm. Council, post free, pub. at 14s., lot 7s. 6d.—Watts, 39, Woolwich Common.

Roscoe's 'Chemistry,' cost 5s., accept 1s. 6d.; 'Pearson's Magazine,' first six numbers, 2s.; 'Army and Navy,' 1st volume, three specials, in splendid condition, cost 8s., accept 4s. 6d.—Bembridge, co. Edison, Alfreton.

A book of 130 Well-tried Recipes for Chemists and Druggists, comprising well-selected formulæ for general, remedial, veterinary, toilet, and everyday preparations. Post free, 1s. 6d.—Tully, Chemist, Hastings.

For Sale.—Conference Year Book, 1884 to 1895, 12 volumes.—Mitten, Hurstpierpoint.

OFFERED—(*continued*).

For Disposal.—A retired chemist's valuable trade and medical library, comprising over 50 vols. List sent on application to—Chemist, 537, Green Lanes, Wood Green, N.

Miscellaneous.

Three doz. 1s. 1½d. Freeman's Chlorodyne, perfectly clean. What offers? G. W., 1, Delph Lane, Leeds.

Magic Lanterns, second-hand; Wrench's telescopic triple and biunial; Ladd's oxyhydrogen microscope; grand biunial patent pamphengos oil; lantern, gives 14-ft. picture; slides and effects, bargains; illustrated list post free, 2d.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

Sell.—3 lbs. finest crystallised vanilla, 24s. lb.; sample 12 stamps. Buy.—Sample case holding about 12 1-oz bottles; description and price to—Chemist, One Ash, Little Lever, Bolton.

Bent Plate-Glass Tooth-brush Case; one large Specie Jar; one 5-gall. Show Bottle (pear shape); one 3-gall. Show Bottle; £2 the lot.—Mellin, Chemist, Eltham.

Photographic Apparatus.

"X" Ray Lantern Slides, 16 splendid subjects, 6d. each; Fluorescent Cyanide for making your own screens, 5s. per ounce.—Pickering, Chemist, Leicester

WANTED.

Wanted, the 'Pharmaceutical Journal' for July 13 and 27, September 7, 1895, and for May 9, 1896. Full price for clean copies will be paid by the Secretary, 17, Bloomsbury Square, London, W.C.

Mr. Robert Wright, pharmaceutical chemist, Buxton, has purchased the business carried on by Frederick Crossley, formerly Barnett, chemist, 5, Devonshire Colonnade, Buxton.

Professor Sir Douglas Maclagan, M.D., LL.D., it is reported, proposes to resign the chair of Forensic Medicine in the University of Edinburgh before the end of the year.

Mr. G. A. Williams, of Messrs. Jewsbury and Brown's, has purchased the business of the late James Hart, pharmaceutical chemist, 131, Embden Street, Manchester.

Messrs. Grimble and Kent, chemists, of Boston, have purchased the business of Mr. Samuel Steeper, chemist and druggist of Swineshead.

Mr. Jas. A. Reid, chemist and mineral water manufacturer, Helensburgh, has gained the Bronze Medal and Diploma of Merit at the Brewers' and Mineral Water Manufacturers' Exhibition and Competition in London. Mr. Reid is the only successful competitor in Scotland.

Chemist's Assistant Poisoned in Kelso.—A young lad, Andrew Christie, belonging to Crieff, an assistant with Mr. Alexander, chemist, Kelso, has been found dead in the premises of his employer. It is supposed that death was due to poisoning, but whether accidental or intentional is not known.

Beecham's Pills.—In the Chancery Division of the High Court of Justice, on November 20, before Mr. Justice Chitty, Mr. Martelli appeared on a motion for the plaintiff in an action by Joseph Beecham, trading as Thomas Beecham, against Joseph William Dewhurst, of 41, Scotland Road, Liverpool, trading as the Public Benefit Drug Company, and asking for an injunction restraining the defendant, his servants or agents from selling as and for Beecham's pills, pills which were not of the plaintiff's manufacture.—His Lordship made the order asked for.

Ulster Pharmaceutical Society.—Professor Tichborne delivered a lecture on "The New Photography," before a very large audience, with Professor Whitla, M.D., in the chair. At the conclusion of the lecture, which was much enjoyed by those present, a cordial vote of thanks was carried with acclamation.

The Manchester College of Pharmacy was the scene of festivities on Saturday, November 21, when the students and their friends assembled to enjoy a concert of vocal and instrumental music. In the laboratories, chemical apparatus and microscopes were exhibited, and in the smaller classroom electrical machines of various types, Geissler's and Crookes' tubes interested the visitors.

FOOTBALL.

Pharmaceuticall Football Club *v.* St. Michael's United.—On Saturday, November 21, at Wormwood Scrubbs the above match was played, and after a very keenly contested game resulted in a victory for the Pharmaceutical by two goals to nil.

Team:—Lean, goal; Smith and Lilley, backs; Nelson, Webster, and Happold, half-backs; Day, Tebbutt, and Jones (centre), Jackson, and Fothergill forwards.

Pharmaceutical Football Club *v.* Earlsfield Ramblers.—This match was played on Saturday last at Garrett Green, and resulted in a win for the home team. Scores: Pharmaceutical, 2; Earlsfield Ramblers, 3.

Team:—Lean, goal; Happold and Jones, backs; Nelson, Webster, and Matthews, halfbacks: Day, Tebbutt, Jackson (centre), Sheldrake, and Fothergill, forwards.

South London School of Pharmacy and Westminster College of Pharmacy.—A football match was played between these teams on Saturday, November 28, at Balham, and resulted in a win for Muter's by 2 goals to 1.

DIARY OF THE WEEK.

Secretaries of Societies are requested to send notices of forthcoming meetings not later than Wednesday in the previous week.

Saturday, December 5.

Pharmaceutical Football Club *v.* Metropolitan College of Pharmacy, at Wormholt Farm, Shepherd's Bush. Kick off at 3 p.m. Train from Gower Street (Met. Ry.) at 2 p.m.

Monday, December 7.

Royal Geographical Society, at 8.30 p.m.
"A Journey to the Sources of the Niger," by Colonel J. K. Trotter, R.A.

Royal Institution, at 5 p.m.
General Monthly Meeting.

Society of Chemical Industry, at 8 p.m.
"The Alkali Manufacture: A Historical Sketch," by Alfred E. Fletcher, F.I.C., F.C.S.
"Notes on the Spontaneous Oxidation of Aluminium in Contact with Mercury," by H. T. Hunt and L. J. Steele, A.I.E.E.

Tuesday, December 8.

Midland Pharmaceutical Association, at 8.30 p.m.
Lecture: "Vegetable Histology," Illustrated by Lantern Slides, by F. H. Alcock, F.I.C.

Pharmaceutical Society, at 8 p.m.
Evening Meeting: "A Note on the Estimation of Quinine," by David Howard, and
"Notes on the Trees Yielding Myrrh and Gum Arabic," by E. M. Holmes, F.L.S.

Royal Colonial Institute, at 8 p.m.
"England's Work in Central Africa" (Illustrated), by Sir Harry H. Johnston, K.C.B., Whitehall Rooms, Hôtel Métropole.

Wednesday, December 9.

Brighton Junior Association of Pharmacy, at 9 p.m.
Lecture: "Comets and Meteors" (Illustrated), by G. F. Lemmon.

Halifax and District Chemists' Association.
Opening Supper at the "Old Cock Hotel."

Manchester Pharmaceutical Association, at 7.30 p.m.
"From Alchemy to Chemistry: a Historical Sketch" (Illustrated), by J. Rymer Young.

Thursday, December 10.

Chemists' Assistants' Association, at 9 p.m.
"The Foundation of Chemistry as a Quantitative Science," by C. A. Hill, A.I.C.

Liverpool Pharmaceutical Students' Society, at 8.30 p.m.
"Plant Fertilisation" (Illustrated), by Prosper H. Marsden, Ph.C., F.C.S.

Midland Chemists' Assistants' Association, at 8 p.m.
First Annual Ball at the Edgbaston Vestry Hall.

Friday, December 11.

Aberdeen Junior Chemists' Association.
"Glass," by T. S. Murray, D.Sc.

Market Report

And Prices Current of Drugs, Chemicals, Oils, and Seeds.

The quotations here given are in all cases the lowest net cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

[Specially Compiled for the 'Pharmaceutical Journal.']

LONDON REPORT.

DECEMBER 10, 1896.

Business has this week again been extremely quiet, caused partly no doubt by the approach of end of year. It is to be hoped that we may see a tangible improvement in trade when once the annual stock-taking has been completed and the coming new year has fairly commenced. Quinine is very dull and weaker. Glycerin quiet. Opium, morphia, and codeia dull and unchanged. Shellac lower. Ipecacuanha and sarsaparilla weak and lower. Castoreum advanced 5s. to 10s. per lb. at late sales. Cod liver oil weak and irregular. Orris firm. Gentian dearer. Saffron firm but quiet. Castor oil very firm, with even higher prices spoken of. The strike in Hamburg is rather hindering the forwarding of goods coming from north of Germany *viâ* that port, and unless matters be speedily arranged inconvenience may readily result.

ACID CARBOLIC.—Steady, with fair demand at current prices, which remain unchanged at 7d. for *ice crystal*, 35° to 36°, in usual large bulk packing; 39° to 40°, 7¾d.; and *detached crystals*, 39° to 40°, 9d. per lb. *Crude*: Easier at 2s. 1d. for 60°, and 2s. 4d. per gallon for 75°. *Liquid*: 1s. 1d. per gallon.

ACID CHRYSOPHANIC.—This has been selling as low as 15s. per lb, but the article is now firmer, as arrivals of *Arraroba* are not so large as was expected.

ACID CITRIC.—Very slow at 1s. 1½d. per lb. for *Ph. B Crystals*.

ACID TARTARIC.—Very quiet at about 1s. 0½d. for *English crystals*, and a half-penny less for *foreign* make.

AMMONIA COMPOUNDS.—*Sulphate* is dull and lower, £7 12s. 6d. per ton being now the quotation for 24 per cent., London; Hull is £7 7s. 6d., and Beckton terms, prompt, £7 7s. 6d. per ton. *Carbonate* unchanged at 3d. per lb. in *casks*, 3⅛d. per lb. in *kegs*, and 3¼d. per lb. in *jars*. *Muriate*: 28s. per cwt. is asked for the 98 to 99 per cent. *Sal ammoniac* unchanged at 37s. 6d. per cwt. for *firsts*, sublimed.

ASAFŒTIDA.—There have been several inquiries on this market from America this week, and a fair business has been done at full prices in medium qualities. Quotations range from 60s. to 100s. per cwt., according to quality. Stock is small, and arrivals this season appear likely to be very limited.

BALSAMS.—*Canada* is firm at 1s. per lb. in casks. *Copaiba* is firm to rather dearer, 2s. 1d. to 2s. 2d. per lb. being quoted for fine quality. *Tolu*: Further lots have arrived on the New York market, the bulk of which is unsold; lower values are therefore probable. Spot prices remain at 2s. 9d. to 3s. 2d. per lb., according to quality and holder.

CAMPHOR.—On the spot quotations for *Crude* remain unchanged, but for arrival the cabled quotations come rather firmer at 107s. 6d. per cwt. for *China* and 117s. 6d. per cwt. for *Japan* Dec.-Jan. shipment, but 105s. per cwt. would be probably accepted for *China* from second-hands. It is said a good business has been done in Japan direct to America at 117s. 6d. per cwt. *c.i.f.* terms. *Refined* continues quiet and unchanged.

CANTHARIDES.—Prime *Russian*, 1s. 11d. to 2s. per lb.

CASCARA SAGRADA—Is quiet but steady at 17s. 6d. per cwt. for good thin bark.

CASTOREUM.—At the Hudson's Bay Company's sale yesterday 1461 lbs. were offered and sold at an advance of from 5s. to 10s. per lb. upon last December's sales. *Firsts* realised from 58s. to 67s. per lb.; *seconds*, 49s. to 59s. per lb.; *thirds*, 38s. to 45s. 6d. per lb.; *pickings*, 37s. 6d. to 43s. per lb., according to condition, mixed *firsts* and *seconds* fetching 50s. to 65s. per lb. The buying appeared to be mainly for home consumption.

CINCHONA.—At the monthly sales on Tuesday the offerings were small, and the market was slightly easier on the average, unit value being ⅝d. *African*: 268 bales offered and sold; fair quill, 2½d.; broken do, 2¼d. per lb. *Calisaya*: 17 bales offered and sold; fair quill, 2d. to 3⅜d. per lb. *Ceylon*; 165 packages offered and sold. Ledgeriana original stem, 1¾d; root, 2¾d.; ledger renewed, 2⅝d.; red original stem and chips, 1⅝d. to 2⅝d. per lb.; crown do., 1⅝d. to 1¼d.; crown renewed, 1¾d.; do. shavings, 1⅝d. *East Indian*: 173 bales offered, and 119 sold; Ledger, original stem, 1¼d.; Crown do., 1⅜d. to 2d.; Crown renewed, 3⅜d. per lb.; *Java*: 204 packages offered and sold; Ledgeriana original stem, 2¼d. to 2½d. per lb.; *South American*: 1111 packages offered, and 350 sold; *Cuprea* at ⅜d. to 1⅜d. per lb. This latter was imported between thirteen and fourteen years ago, its value then being about 2s. per lb., so that the prices realised will not cover the wharf charges.

CLOVES.—*Zanzibar*: Slightly better this week, although the business has been on a small scale. Of 100 bales in auction 20 bales good bright fetched 2⅜d.; for January to March and later delivery the price is about 2⅜d. to 2¼d.

COAL TAR DISTILLATION PRODUCTS.—*Toluol*, 2s. 1d. per gallon. *Benzole*, 50 per cent., 2s. 8d; 90 per cent., 3s. 3d. per gallon. *Crude naphtha*, 30 per cent. at 120° C., 1s. 4d. per gallon; *Solvent naphtha*, 95 per cent. at 160° C., 1s. 10d.; 90 per cent. at 160° C., 1s. 7d.; 90 per cent. at 190° C., 1s. 2d. per gallon.

COCAINE—Very quiet at 12s. 10d. per oz. for *Hydrochlorate* in 100 oz. lots.

CODEIA.—No change to report, value being 11s. 6d. per oz. for quantity.

COD-LIVER OIL—Quiet, prices varying from 140s. for fair quality to 160s. per barrel for finest *non-congealing Lofoten*; for *Newfoundland*, 5s. to 6s. per gal. is asked according to quality.

CREAM OF TARTAR—Is dearer at 80s. per cwt. for *first crystals*, and 82s. per cwt. for good *white powder*.

ERGOT OF RYE—Quiet. Good *Russian* on spot is quoted 6½d.; *Spanish*, 7d. per lb.

GLYCERIN — Nominally unchanged, makers' prices being 70s. to 75s. per cwt. for finest *white double distilled*, 1260 in tins and cases, but there are second-hand sellers at slightly less than above figures.

GINGER.—Market quiet and easier. 30 cases *Cochin* sold at 28s. 6d. to 30s., with one lot bright cut at 66s. 6d.; a half-barrel *Jamaica* sold at 80s., the rest being bought in.

GUM TRAGACANTH.—In the auctions on the 3rd inst. about 300 packages were sold, chiefly "without reserve," and on the whole fetched good prices. Privately but little business is passing, and quotations remain unaltered: *Firsts*, £14 to £15; *seconds*, £12 10s. to £13 10s.; *thirds*, £11 to £12; *fourths*, £9 to £10 10s.

LYCOPODIUM—Is cheaper, *Russian sifted* being offered at 1s. 2d. per lb., or for *double sifted*, 1s. 4d. per lb., *f.o.b.*, *Hamburg*.

MENTHOL—Remains at 8s. to 8s. 6d. per lb. for good quality on spot.

MORPHIA.—Very quiet, price remaining unchanged at 5s. per oz. for *hydrochlorate powder* for larger contracts; smaller quantities higher in proportion.

OILS (ESSENTIAL).—Quotations for new season's Messina essences have just been received. *Lemon*: 3s. 6d. to 3s. 9d. per lb., as to quality. *Bergamotte*: 5s. 9d. to

6s. 9d. per lb. *Sweet Orange*: 5s. 9d. to 6s. 6d. per lb. *Bitter Orange*: 8s. 6d. per lb. *Mandarin Orange*: 22s. 3d. per lb. *Peppermint*: All kinds are advancing. *H.G.H*, business has been done at 8s. per lb. on the spot, the New York quotation being 7s. 9d. per lb., *f.o.b. Wayne County*: although dearer, is still relatively cheap at 5s. 6d. per lb. *Mitcham*: 31s. to 32s. per lb., as to holder. *Cajeput*: Is in fair demand at 3s. per bottle for fine quality. *Rosmary*: 1s. 4d. to 3s. per lb., as to quality. *Ylang-Ylang*: Is very scarce, fine genuine Manila being held for 15s. per oz. *Sassafras*: Is very scarce, 2s. per lb. is asked for genuine. *Citronella*: Steady at 1s. 3d. per lb. for both tins and drums. *Cassia*: Easier at 7s. 3d. per lb. for 70-75 per cent. to arrive. *Star anise*: Slightly lower at 7s. 10½d. per lb. on the spot.

Oils (Fixed and Spirits).—*Castor* is very scarce on the spot, *E. I. firsts* being quoted at 4¼d. to 4½d. per lb., *seconds* 3¾d. per lb. *Italian*, 44s. per cwt. *French*, 37s. 6d. per cwt. is asked for the medicinal quality, this latter for delivery in January. *Linseed* is lower since last week, but closes rather firmer at £15 7s. 6d. per ton. *Rape* quiet but unchanged at £28 to £28 10s. per ton on the spot. *Cotton* is lower at £14 15s. to £15 15s. for refined, according to make and package. *Coconut*: Dull and slightly lower at £23 15s. for *Ceylon* and £28 for *Cochin*. *Palm*: Lagos is lower at £23 10s. on the spot. *Turpentine*: American on the spot is decidedly dearer at 20s. 9d. per cwt., and very firm thereat. *Petroleum Oil*: Dull, and again slightly easier for *American*, quotations being 5½d. per gallon; *water white*, 6¾d. per gallon. *Russian*: Also lower at 5d. per gallon. *Petroleum Spirit*: Unchanged at 7¾d. to 8d. per gallon for *American*; deodorised, 8d. to 8¼d. per gallon.

Opium—Unchanged, with but little doing, owing partly at least, no doubt, to season of the year. Prices are: *Manufacturing*, 8s. 3d. to 9s.; *druggists'*, 8s. 9d. to 9s. 6d.; *Persian*, 9s. 6d. to 11s.; soft *shipping*, 11s. 6d. to 13s. 6d. per lb.

Orris Root.—Market remains quiet, but steady. It is stated that some parcels which were quoted somewhat cheaply for shipment turned out to be very damp, result of which could only be a very unsatisfactory condition on arrival here, to say nothing of the consequent loss in weight. On the spot good *Florentine* is still obtainable at 72s. 6d. to 75s. per cwt.

Podophyllin—Has become rather quiet, although price for the B.P. quality is firm at 15s. per lb., the root being very scarce and dear.

Potash Compounds.—*Chlorate* is rather dearer, 4¼d. per lb. being now asked for spot delivery. *Bichromate* steady at 4¾d. per lb. *Prussiate* dull at 6d. per lb. *Bicarbonate* firm at 30s. per cwt. *Permanganate*: Demand is slack, and it would be possible to obtain moderate quantities for prompt delivery at about makers' prices, which are 72s. 6d. per cwt. for small crystals, and 5s. per cwt. more for large.

Quinine is very depressed; very little business is doing in the article, and small lots of second-hand (Factory weights) have been sold at 9d. per oz.

Roots.—*Belladonna* remains scarce, really good quality being quoted 42s. 6d. per cwt., but it is doubtful whether much could be obtained at this or, in fact, at any figure. *Gentian* remains very scarce, 30s. per cwt., *c.i.f.*, having been paid for good root, and more could hardly be secured at the price.

Saccharine.—One of the makers quotes the 300 strength, 32s. 6d. per lb., and the 500 strength 52s. 6d. per lb.; for larger quantity, however, somewhat less would no doubt be accepted.

Saffron—Very steady at unchanged prices. Good *new* can be had at about 47s. 6d. per lb., and *old* about 1s. cheaper. Some *old* of fair quality, but not very bright, is offering comparatively cheaply at about 35s. per lb.

Shellac.—An exceedingly quiet market privately, only small sales having taken place during the week. For arrival the market is slightly firmer, the only sale reported however being 100 cases *Second Orange*, Dec.-Feb. steamer at 78s. At the weekly sales on Tuesday, supplies were very unimportant, and these went off with very little demand at a decline of from 1s. to 2s. per cwt. Of a total of 486 cases, only 105 sold; 30 cases *Fine Orange* were bought in at 100s.; good bright strong cakey at 90s. per cwt. *Second Orange*: Of 393 cases offered 95 cases sold, good bright curly, free at 86s.; all more or less cakey and blocky, fair to good bright red at 78s. to 79s.; ordinary to middling at 73s. to 75s. per cwt.

Soda Compounds.—*Crystals* continue quiet and unchanged at 42s. 6d. per ton ex ship terms. *Bicarbonate* steady at 7s. 3d. to 7s. 6d. per cwt. for the 99 per cent. quality, whilst the free from mono-carbonate is quiet at 17s. 6d. to 18s. per cwt. *Nitrate*: *Refined* is dull at £8 5s. per ton. *Caustic*: £8 is still asked for 70 per cent., and £1 per ton less for 60 per cent, but only small sales have been made this week.

Spermaceti—Is dearer at 1s. 5½d. per lb., and from all appearances is likely to go still higher.

Spices (Various).—*Capsicums* and *Chillies* dull, and no sales effected. *Cassia lignea*: 100 bales broken sold at 21s. *Cinnamon*: 300 bags ordinary coarse *Ceylon chips* bought in at 2⅛d. *Coriander seed*; 89 bags *Tunis* sold at 7s. 6d. to 8s. 9d. *Mace* quiet: 3 cases *Penang* ordinary sold at 1s. 1½d., and 6 packages *West India* at 1s. 2d. to 1s. 4d. *Nutmegs* easier; 20 cases *Penang* sold at 2s. 10½d. for 64's down to 1s. 6d. for 91's; 37 packages *West India* sold: 57's, 2s. 11d.; 80's, 1s. 7d.; 106's, 1s. *Pepper* quiet, but steady; buyers of *Singapore*, Jan.-March, at 2⅞d. *White Pepper* sold well in auction; *Penang*, 3¼d. to 3⅜d.; *Siam*, 4d.; *Singapore*, 4¾d. to 5¼d. *Pimento*: Small sales at 2⅛d. to 2¼d.

Sulphate of Copper—Is quiet at 17s. to 17s. 9d. per cwt, according to quality.

To day's sales went off very quietly, a considerable portion of the lots offered remaining unsold, the following being some o the details:—

Aloes.—*Curacao*: Of 20 boxes 5 only of fine livery quality sold at 35s. per cwt. *Cape*: Very slow of sale, only 15 cases softish to drossy selling at 16s. to 19s. cwt. *Socotrine*: 3 kegs very coarse sold 49s. per cwt. Of 15 kegs good from second-hands, 5 sold at 90s. per cwt., an advance of 10s. per cwt., 6 kegs low drossy sold 18s. *Tins* were bought in at 60s., this being the price demanded.

Araroba.—7 cases fine to fair colour, some wood, held for 5s. per lb.

Asafœtida.—In sale 48 cases were offered, but half of this quantity was of low quality, and no bids could be obtained. The balance was of fair to good quality, but was held for fully 20s. to 30s. per cwt. above present values, although later on there seems little doubt the holder's figures will have to be paid. Privately a few cases of good almondy block sold at 75s. per cwt.

Barks.—Ten cases *Cinchona* crown hybrid fair rough quill bought in at 5d. per lb. *Cascarilla*: 44 packages small brownish sold at 27s. to 31s. per cwt.

Beans.—*Tonquin*: fair frosted *Para* taken out 1s. 11d.; one case foxy sold cheaply at 7½d. per lb. *Calabar*: 54 bags good sound held for 2d. per lb.

Canthabides.—Seven cases fair dusty *China* taken out at 1s. per lb.

Cardamons.—1 case extra bold pale, rather shelly, was held for 5s. 9d., only 5s. 2d. being bid. 1 case low brown sold at comparatively high price of 2s. 7d. Fair grey fetched 3s. 5d.; medium bold pale *Mysore*, 4s. to 4s. 8d.; third size ditto, partly splitting, 3s. 4d. per lb.

Cassia Fistula.—20 bags rather inferior fetched 5s. 9d. per cwt.

Castor Oil.—50 cases *Calcutta firsts* taken out at 4¾d. per lb.

Cod-Liver Oil.—25 barrels fair *Norwegian* held for 150s. per barrel.

Colocynth.—Fine pale *Spanish* pulp held for 6s. per lb., there being no bid. Fair pale *Turkey* apple bought in at 1s. 11d. to 2s.; 10 cases *Spanish* held for 1s. per lb., showing a somewhat weaker market.

Dragon's Blood.—1 case medium bright lump bought in at £7 10s. per cwt.

Ergot of Rye.—Fair *Spanish*, slightly wormy, sifted, held for 8d. per lb.; 46 bags good bold sound *Russian* at 6¼d. per lb.

Gamboge—12 cases bright block, partly soft, held for £8 to £8 15s. per cwt.

Gums.—*Arabic*: Of 2 cases picked 1 case grain was held for £6. 1 case glassy taken out at £8. Fair pale sorts held for 82s. 6d. to 85s. per cwt. *Mastic*: 3 cases yellow sold at 1s. 1½d. per lb. *Kino*: 1 case good genuine taken out at 10s. per lb. *Tragacanth*: 1 case low quality sold without reserve at 76s. per cwt. *Benjamin*: Fair *Palembang* bought in at 30s.; do. block at 25s. Good *Sumatra seconds* fetched £7 15s. to £7 17s. 6d., which is lower. *Siam*: Free small to medium part bold part block taken out at £17, and fair free at £20 per cwt. *Elemi*: 20 cases yellow were taken out at 25s. per cwt. *Galbanum*: 20 packages offered were all bought in at 9d. for blocky to 1s. 6d. per lb. for good mixed with darkish.

Honey.—4 barrels fair *Jamaica* fetched 27s.; 60 cases medium *Californian* sold cheaply at 28s.; 28 cases *New Zealand* held for 20s. per cwt.

Ipecacuanha—Very dull, fair wiry part sold at 5s. 4d. to 5s. 6d. per lb.

Jalap.—7 bales fair small heavy held for 6½d. per lb.

Kamala.—No bid for 3 cases not very

bright and somewhat dusty, which were taken out at 5d. per lb.

KOLA NUTS.—1 bag dull and cut fetched 3½d.; 15 bags fair but mixed were bought in at 4d. per lb.

LEAVES.—*Buchu*: Inferior yellowish round sold partly without reserve at 2¼d. to 2½d., remainder bought in at 2¾d. per lb. *Coca*: For 71 bales, chiefly somewhat inferior *Truxillo*, there was no bid. *Cactus grandiflora*: 16 bags rather dark were taken out at 9d. per lb. *Jaborandi*: For 5 bales brownish broken there was no bid; 3d. per lb. would probably not have been refused.

LIQUORICE—Ten bales *Persian* sold prior to sale at 7s. 6d. per cwt.

MENTHOL.—Six cases of fair quality taken out at 8s., but 7s. 9d. per lb. would probably have been accepted.

MUSK—One tin *Tonquin*, small to medium grey, half trimmed, heavy backs, sold prior to sale at 77s. 6d. per oz., which is an advance of 20s. to 25s. on value previously ruling. Remainder bought in at various prices, according to quality. Fine blues are exceedingly scarce, and would probably realise fully 90s. to 95s. per oz.

OILS (ESSENTIAL).—*Peppermint*: *Japanese*, 40 per cent. menthol, guaranteed, held for 5s. 6d. per lb. *Eucalyptus*: 14 cases *Risdonia* held for 1s. 6d., 1 case *Amydalina* for 1s. 3d.; *Globulus* partly sold at 1s. 8d. per lb. *Lemon*: 3 cases were held for 3s. 6d. per lb.

OPIUM.—One case *Persian sea damaged* fetched 8s. 6d. per lb.

QUININE.—2000 ozs. *French sulphate* were again in sale. Quality is said to be very good, but the article is somewhat dense, *i.e.*, not sufficiently bulky. There was no bid, 9d. per oz., or perhaps even less, would probably have been accepted.

RHUBARB.—Fine bold round *Shensi*, slightly wormy, held for 2s. 6d., fair ditto at 2s. 3d., bold flat held for 1s. 6d. Two cases low round sold without reserve at 9½d. to 10d., fair round *Canton* held for 1s. per lb.

ROOTS.—*Colombo*: fair bright washed bought in at 60s., dull at 30s. Common sorts with stem, 25s. per cwt. *Galangal*: for 2 bags without reserve there was no bid.

SARSAPARILLA.—Good *Jamaica* sold at 1s. 5d. to 1s. 6d. per lb., which shows lower values. 1 bale grey native fetched 10d. per lb.

SCAMMONY.—9 cases offered, but the whole was bought in. Privately the market has been cleared of *firsts* at 30s. per lb., and a good business has also been done in lower grades at private rates.

SEEDS (CUMIN).—44 bags good *Malta* taken out for 34s. *Coriander*: 60 bags small sold at 8s.; fair held for 15s. per cwt. *Fennel*: 1 bag fine green sold at 22s. 6d. per cwt. *Quince*: 2 bags slightly mouldy held for 1s. 3d. per lb. *Celery*: 10 bags taken out, 33s. per cwt. being the price. *Annatto*: 33 bags held for 4d. lb. *Anis*: 30 bags new crop *Russian* sold at 16s. 6d.; 30 bags *Japan* like Russian in appearance, but somewhat darker in colour bought in at 30s. per cwt.

SENNA.—*Tinnevelly* About 200 bales were offered, but the bulk was of small leaf character. The demand was inactive, and prices were, if anything, a shade lower. *Alexandrian*: 35 packages of this quality were offered, but nothing sold. Good leaf is held for 1s. to 1s. 2d. per lb.

VANILLA.—About 230 tins were offered and met with good competition at about 2s. per lb. dearer. Owing to a short Mexican crop, American buyers have had to come on this market.

WAX.—Twenty-five packages good *Jamaica* sold at £7 17s. 6d. to £8 2s. 6d. per cwt., two cases fair *Cape* at £6 15s., seven cases bleached *Calcutta* at £6. Medium *Australian* sold at £6 5s., fair *Zanzibar* at £5 17s. 6d. to £6. 20 bags *Carnauba* held for 50s. per cwt.

NEWCASTLE REPORT.

DECEMBER 9, 1896.

Quietness still prevails this way in the wholesale chemical line, and will continue until the turn of the year. Export orders are specially scarce. Prices, however, do not flinch from late quotations, which keep as follows:—*Bleaching powder*, according to markets, £6 10s. to £7 10s. *Soda crystals*: 37s. 6d. to 45s. *Caustic soda*: 70 per cent., £7 2s. 6d. to £7 10s. *Soda ash*: 52 per cent., £4 5s. *Alkali*: 52 per cent., £5 5s. *Sulphur*: £5 per ton.

LIVERPOOL REPORT.

DECEMBER 9, 1896.

Business this week has been quiet, and without any item worthy of particular mention. Some good sales of Gambia beeswax have taken place at fully recent rates, in addition to which Teneriffe black grain cochineal and honey have been disposed of for good prices. In oils, castor continues to sustain its recent advance as regards Calcutta, though French first pressure and Madras oils are easier. Olive oil is selling steadily at full prices, whilst both linseed oil and cottonseed oil have experienced still further reductions in price.

AMMONIA SULPHATE—Is dull here at £7 12s. 6d. per ton *f.o.b.*

ARSENIC—In *powder*, £22 10s. per ton.

BEESWAX—Has sold to the extent of 44 bales of *Gambia* at £6 7s. 6d. per cwt.

BLEACHING POWDER—Is slightly higher at £6 15s. per ton for "hard."

BORAX—Still stands firm at 20s. per cwt. for *lump*, and 21s. for *powder*.

CANARYSEED—Is quite neglected, and prices—28s. 6d. to 29s. per 464 lbs. for *Turkish*—are purely nominal, as no business has been done at these rates.

COCHINEAL—A few sales have been made of black grain *Teneriffe* at 1s. 2d. per lb.

CARNAUBA WAX.—*Grey* has been disposed of from 45s. to 47s. 6d. per cwt.

COPPERAS—Is in good demand, and maintains its price, viz., 38s. per ton *Lancashire*; 36s. *Welsh*.

COPPER SULPHATE—For spot delivery is still £17 15s. per ton.

CHILLIES.—*Sierra Leone* fruit have found buyers at 34s. per cwt., *ex* store.

HONEY.—Twenty barrels of *Chilian* sold at 25s. per cwt., and a small quantity of *Californian* at 24s. per cwt.

OILS (FIXED).—*Castor oil*: *Calcutta* is still at 3¾d. per lb., but *Madras* and first pressure *French* are down to 3½d., with a moderate amount of trade doing at these figures. *Olive oil* is very firm and in good demand, *Spanish* oils selling freely; *Seville*, £28 to £29 10s. per tun; *Malaga*, £29 10s. to £30. *Linseed oil* is very slow of sale at 16s. 3d. to 17s. 6d. per cwt. for *Liverpool* pressed oil. *Cottonseed oil*: *Liverpool* refined is again lower at 15s. 9d. to 16s. 3d. per cwt. *Spirit of turpentine* is firmer and slightly dearer, 21s. to 21s. 3d. per cwt.

POTASHES—Are still unchanged at 21s. to 21s. 3d. per cwt.

PEARLASHES—Are slow of sale at 32s. 6d. to 35s. per cwt.

PRUSSIATE OF POTASH—Is firm at 6¾d. per lb.

POTASH CHLORATE.—Spot value, 4⅛d per lb.

SAL AMMONIAC.—35s. to 37s. per cwt.

SODIUM BICARBONATE—Is at £7 per ton.

SODA CRYSTALS.—Quiet at £2 10s. per ton.

SODA, CAUSTIC.—70 per cent., £7 10s. per ton; 60 per cent., £6 10s.

SULPHUR.—*Roll* at £5 10s. per ton; *flour*, £7 10s. per ton.

MANCHESTER REPORT.

DECEMBER 9, 1896.

The publication of the Board of Trade returns must cause much disquietude in the inner circle of the chemical trade. True, the slight boom caused by the result of the Presidential election has still to be accounted for, and may appear at some future period, but with the exception of *Bleaching powder*, and that only to a small extent, the downward course has not been arrested. In this district things are quiet, although there is no material change in prices. In miscellaneous articles, *Sulphate of copper* remains firm, and *Welsh brown acetate* is well maintained, owing to the comparatively small import of American. *Sulphate of copper* is quoted £17 15s. to £18 for best brands, delivered here. *Brown acetate*: £4 17s. 6d. to £5 for *Welsh*. *Alum* is in fair demand at £4 17s. 6d. to £5 for loose lump; £5 2s. 6d., lump in tierces; and £5 12s. 6d. ground in bags. *Green copperas* is still scarce, and *Lancashire* is firm at 32s., *f.a.s.*, Ship Canal, and 38s., *f.o.b.*, *Liverpool*. *Bichromate of potash* and *soda* are a shade better. *Sulphate of ammonia* is quoted as low as £7 10s. per ton, *Leith*. *Arsenic* appears to be advancing, and here it is quoted £24 per ton, *ex* Garston. *Chlorate of soda* fairly firm at 5d. *Ammonia alkali* is dull, but *bicarbonate* is fairly firm at late rates. *Naphthas* are a shade better. *Solvent wood* (best) 2s. 10d., and *miscible* (white colourless) 3s. per gallon.

NEWS IN BRIEF.

THE MANCHESTER PHARMACEUTICAL SOCIETY was favoured with a lecture on a most fascinating subject on Wednesday night, when Mr. J. Rymer Young, of Warrington, discoursed upon alchemy and pharmacy. Mr. G. S. Woolley took the chair at the meeting, and at the close of the lecture expressed the great pleasure experienced by himself and the large audience present. The report of the lecture was received too late for publication in this week's Journal.

EXCHANGE—OFFERS AND WANTS.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Miscellaneous.

Handsome Wenham Gas Lamp, silver-plated pendant, gives splendid light. Cost £5, sell 15s., a bargain.—Allen, Chemist, Plymouth.

Magic Lanterns, second-hand; Wrench's telescopic triple and biunial; Ladd's oxyhydrogen microscope; grand biunial patent pamphengos oil; lantern, gives 14-ft. picture; slides and effects, bargains; illustrated list post free, 2d.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

Six-gallon Pear-shaped Window Carboy (cut glass stopper), with flat mahogany stand, Fig. 1 Maw, 18s. f.o.r.—Brigstocke, Chemist, Carmarthen.

To be Sold.—The Fittings of a first-class West-End chemist: Dispensing counter and screen, cut-stopper show bottles, specie jars, fancy gold scroll labels, and gold tops, 80 shop rounds, pink and gold covered pots, 3 ranges of 108 mahogany gold label drawers, good shelving, etc. On view at—26, Sussex Gardens, Hyde Park, W.

Soda-Water Machine, Barnett and Foster, £15; Syphon Filler, Bratby and Hinchliffe, £3; Crossley's Vertical Gas Engine, ½-horse power, £15. Each machine perfect and at work.—Fitton, Chemist, Hertford.

Large Shop Stove (Wright and Butler), 4 wicks, 1½ inch; cost £2, price 10s.; photo 6 stamps.—Pickering, Chemist, Leicester.

Photographic Apparatus.

"X" Ray Lantern Slides, 16 splendid subjects, 6d. each; Fluorescent Cyanide for making your own screens, 5s. per ounce.—Pickering, Chemist, Leicester.

Books, etc.

A book of 130 Well-tried Recipes for Chemists and Druggists, comprising well-selected formulæ for general, remedial, veterinary, toilet, and everyday preparations. Post free, 1s. 6d.—Tully, Chemist, Hastings.

Roscoe's 'Chemistry,' cost 5s., accept 2s. 0d.; 'Pearson's Magazine,' first six numbers, 2s.; 'Army and Navy,' 1st volume, three specials, in splendid condition, cost 8s., accept 4s. 6d.—Bembridge, c/o Evison, Alfreton.

WANTED.

Wanted.—A 1-gr. Pill Machine in good condition Send particulars to—Grimble and Kent, Boston.

Microscope wanted with two or three object glasses; must be a reliable instrument, in sound condition. Full particulars and lowest price to—Dennis, 11, Mercery Lane, Canterbury.

COMPANY PHARMACY.—Messrs. H. Williams and Company, Limited, grocers and provision dealers, Dublin, who were successfully prosecuted some time ago for selling poisons, have decided to open a compounding department at their head establishment. It is stated that a Mr. Henry O'Reilly has been appointed compounder, but that name does not appear upon the Register of Pharmaceutical Chemists for Ireland.

PHARMACY AND BENEVOLENCE IN THE NORTH.—The old shop from which Mr. J. C. Eno first launched his Fruit Salt has ceased to exist as a pharmacy. The conspicuous success which his advertising genius has brought him has been the admiration and sometimes the envy of those who have been left behind in the race for wealth. But all commend his noble contribution of one thousand guineas to the building fund of the Royal Infirmary of the city where his business career began. Amongst other donors to the same fund the firms of Messrs. Mawson and Swan, and Messrs. Brady and Martin are down for substantial amounts.

PHARMACEUTICAL FOOTBALL CLUB *v.* METROPOLITAN COLLEGE OF PHARMACY (WATSON WILL'S).—This match, played on Saturday last at Wormholt Farm, excited considerable interest, and both teams were well supported by their respective schools. The teams were well matched, and when the game was brought to a close the scores stood:—Metropolitan, 1; Pharmaceutical, 3.

TEAM:—Lean, goal; Jones and Miles, backs; Nelson, Webster, and Smith, halfbacks; Cardwell, Happold, Fothergill (centre), Tebbutt, and Day, forwards.

MR. CAMPBELL A. CONNAN, lately with Messrs. Dandie and Co., Perth, has purchased the business at Cowdenbeath, Fife, formerly carried on by Mr. William Dow, as a branch.

MR. FREDERICK MINSTERMANN, of "Groves' Pharmacy," Via Borgognissandi No. 15, Florence, has no longer any pecuniary or other interest in the business, the lease given to him by the widow of the late Henry Groves (Adalgisa Cristoffanini Groves) having expired.

MR. FREDERICK DAVIS, analyst, has changed his business premises from 26 and 28, Newington Causeway to "The Laboratory," 51, Imperial Buildings, Ludgate Circus, E.C.

MR. JAMES HALL BLACK, chemist and druggist, of Moffat, N.B., died suddenly on December 8. Aged 55. He was a son of the late Mr. Charles Black, botanist, and was born at Whitehouse, Alford, Aberdeenshire. For some years he was a magistrate in Moffat.

JOSEPH EDWARD BROOKBANK was found guilty at Stafford Assizes, on Wednesday, December 2, of obtaining money from Mr. Albert Marshall, chemist, Lichfield, by false pretences (see last week's Supplement), and sentenced to six months' imprisonment with hard labour.

MR. JOHN A. GRIFFITS, chemist, of Torrington, appeared for his adjourned examination at the Barnstaple Bankruptcy Court last week. The debtor, replying to the Official Receiver, said the cause of his insolvency was becoming guarantee for the payment of trust money under his father's will, he having been liable for £828. A judgment against him for that amount was obtained some fourteen years ago. He had reduced that amount to £400 out of his own private purse. He had acted as an insurance agent, but there was now no liability outstanding on that account. Before closing the examination the Registrar said it seemed to him that the debtor had been trading honestly and properly. He had answered the questions put to him in a straightforward manner. It was a very unfortunate bankruptcy, and but for the fact that this judgment was recorded against him debtor would by his business have saved money. The Official Receiver concurred, and the examination was closed.

CORRECTION.

COMPRESSED GASES.—The last line in the first column of Mr. Maben's paper (*ante*, p. 481) should have been at the foot of the second column.

DIARY OF THE WEEK.

Secretaries of Societies are requested to send notices of forthcoming meetings not later than Wednesday in the previous week.

SATURDAY, DECEMBER 12.

PHARMACEUTICAL FOOTBALL CLUB *v.* South London School of Pharmacy ("Muter's"), at Wormholt Farm, Shepherd's Bush. Kick off at 3 p.m. Trains from Gower Street (Met. Ry.) at 1.57 and 2.7.

TUESDAY, DECEMBER 15.

BRADFORD AND DISTRICT CHEMISTS' ASSOCIATION. Smoking Concert.

ROYAL PHOTOGRAPHIC SOCIETY, at 8 p.m.
"Some Probable Causes of Trouble in Photo-Engraving, with demonstrations of methods for their detection," by Andrew Wybrandt-Penrose.

WEDNESDAY, DECEMBER 16.

BRIGHTON JUNIOR ASSOCIATION OF PHARMACY, at 9 p.m.
Social and Musical Evening.

MIDLAND CHEMISTS' ASSISTANTS' ASSOCIATION, at 9 p.m.
"Laboratory Notes," by John Barclay, B.Sc.

WESTERN CHEMISTS' ASSOCIATION (OF LONDON), at 9 p.m.
Inaugural Address by the President, Mr. J. W. Taplin.

THURSDAY, DECEMBER 17.

CHEMICAL SOCIETY, at 8 p.m.
Miscellaneous Papers.

CHEMISTS' ASSISTANTS' ASSOCIATION, at 8.30 p.m.
Musical and Social Evening.

GLASGOW AND WEST OF SCOTLAND PHARMACEUTICAL ASSOCIATION, at 9.15 p.m.
"From Mont Blanc to the Matterhorn" (Illustrated), by W. Lamond Howie,

FRIDAY, DECEMBER 18.

ABERDEEN JUNIOR CHEMISTS' ASSOCIATION.
"Over the Scotland Alps with a Camera," by J. Porter.

EDINBURGH CHEMISTS', ASSISTANTS', AND APPRENTICES' ASSOCIATION, at 9 15 p.m.
Apprentices' Night, conducted by James Sivewright.
Miscellaneous Papers.

SCHOOL OF PHARMACY STUDENTS' ASSOCIATION, at 8.30 p.m.
"Views in the Himalayas," by Professor Collie.

SHEFFIELD MICROSCOPICAL SOCIETY, at 8 p.m.
Practical Night, conducted by Members.

« Market Report »

And Prices Current of Drugs, Chemicals, Oils, and Seeds.

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

[Specially Compiled for the 'Pharmaceutical Journal.']

LONDON REPORT.

DECEMBER 17, 1896.

Business has again been somewhat quiet during the week, although as a matter of fact, a somewhat larger number of transactions has taken place than during previous week. The two chief items of interest have been the further advance in price of atropia, and a further fall in value of cocaine. At the Dutch sale cinchona bark fetched prices which show an advance of about 5 per cent., this might point to the possibility of an improvement in price of quinine were it not for certain other not unimportant factors in the case. Consequently quinine remains quiet. Balsam copaiba decidedly dearer. Orris root slightly firmer, same applying also to cream of tartar and all tartrates. Camphor dull, with a slight reduction in price of refined tablets. Opium, steady; morphia, quiet; codeia, firm; glycerine, steady, but quiet; shellac, rather easier; cod-liver oil, somewhat irregular; chlorate of potash, slightly dearer. The following are actual prices of the articles of chief interest:—

ACID CARBOLIC – Firm, with good demand, prices remaining unchanged at 7d. per lb. for 34° to 35° *ice crystals* in large bulk packing, other qualities and packing in proportion; *crude* without change; *liquid* steady at 1s. 1d. per gal.

ACID CHRYSOPHANIC.—16s. per lb. is asked for *German*, but English makers want more, holders of *Arraroba* being firm with late arrivals.

ACID CITRIC—Is very quiet, and prices are quite nominal at 1s. 1¼d. to 1s. 1½d. per lb.

ACID OXALIC—Very firm at 3¾d. per lb. There is some talk of higher prices being fixed early in the New Year.

ACID TARTARIC—Is firmer although quiet; *English* quoted at 12½d. per lb.; *foreign*, 11¾d. per lb.

AMMONIA COMPOUNDS.—*Sulphate* is lower, but closes steadier at £7 10s. per ton for grey prompt 24 per cent., London. Hull rather firmer at £7 7s. 6d. to £7 10s. Beckton terms prompt £7 7s. 6d. per ton. *Carbonate* unchanged at 3d. per lb. in *casks*, 3⅛d. in *kegs*, and 3¼d. in *jars*. *Sal ammoniac* steady at 37s. 6d. per cwt. for sublimed *firsts*. *Muriate*: For the 88 to 99 per cent. 28s. per cwt. is the spot price.

ATROPINE.—Owing to the rise in price of belladonna root, the price of the alkaloid was advanced after the publication of our last report, the makers' quotations being now—

	Pure	Sulphate P.B.
16 oz. lots	13s. 6d. per oz.	11s. 2d. per oz.
75 ,, ,,	13s. 4d. ,,	11s. ,,

25 ozs. free package. 1 oz. bottles 1½d. each extra.

There are small lots in second-hands to be had slightly under these figures, but owing to the scarcity of the root, higher prices are considered not improbable.

BALSAM COPAIBA.—There has been some considerable buying of *Maranham* quality this week, it is said for American account, and prices are now much higher, 2s. 6d. to 2s. 9d. per lb. being asked. *Tolu*: Exceedingly quiet, and buyers are holding off; price now quoted of 2s. 6d. per lb. is therefore nominal.

BISMUTH.—It is thought that there may possibly be an advance in price after the New Year, present price for the *metal* being 3s. per lb., while for the *salts* the makers have just slightly reduced their prices, which are now 3s. 6d. for the *subnitrate*, and 3s. 11d. for *Carbonate*; 5 cwt. lots, 3d. per lb. less.

BLEACHING POWDER—Is unchanged at 7s. 6d. to 7s. 9d. per cwt.

CAFFEINE—Unchanged at 18s. per lb. for 100 lb. lots.

CAMPHOR.—The market for *Crude* is very dull, with a weak tendency, but no transactions have taken place this week, so prices are quite nominal. *Refined*: The German makers have reduced their prices for tablets to 1s. 5½d. to 1s. 6½d. per lb., according to quantity, these prices being for 16, 8, and 4-oz. sizes, whilst for 2 and 3-oz. they quote ½d. per lb. more; for 1 oz., 1d. more; ¾ oz., 1½d.; ½ oz., 2d.; ⅓ oz., 2½d.; and ¼ oz., 3d. per lb. more, all for delivery December, 1896, to February, 1897.

CINCHONA.—The Dutch sales at Amsterdam last Thursday went off with great spirit, nearly the whole of the quantity offered (6984 packages) finding buyers at an advance of about 4 per cent. on the last auctions in September

CLOVES.—*Zanzibar*: steady at last rates, but little business passing. Ten bales in sale realised 2¾d. Sellers Jan.-March, 2⅞d., March-May, 2¼d.

COAL TAR DISTILLATION PRODUCTS—Quiet, with not very much doing.

COCAINE HYDROCHLORATE.—On Monday last the makers reduced the price of this to 11s. 5d. per oz for 100 oz. lots; 11s. 7d. per oz. for 25 oz. lots. The *pure* is quoted 13s. 8d. to 14s. per oz. according to quantity, the difference between the pure and the hydroclolorate salt being now only 2s. 3d. per oz, instead of 3s. per oz., as hitherto. The above quotations are for bulk packing; in 1 oz. bottles 3d. per oz, and in 1 grm. tubes 2s. 6d. per oz. is to be added in each case. It is stated that the cause of the reduction is the present low price of the crude article, but the underselling of a new maker may have had some hing to do with it. It is thought that present rates for *crude* have touched a non-paying basis.

CODEIA—Steady at 11s. 6d. per oz. Price is, however, expected to be dearer, in face of a probable improvement in demand.

COD-LIVER OIL.—Market dull and irregular at 140s. to 160s. per cwt. for *Norwegian*, according to quality, etc. Should a better demand set in, we should no doubt at once see distinctly firmer prices.

CREAM OF TARTAR—Is dearer, 77s. per cwt. having been paid for good white *crystals f.o.b.* Bordeaux; whilst on the spot 81s. per cwt. is quoted, *powder* being 2s. per cwt. more.

ERGOT OF RYE—Is decidedly firmer, 7d. per lb. being the general quotation for sound *Russian*, but there are still a few sellers below this figure. For "Continental," 6d. to 6½d. per lb. is asked.

GENTIAN—Very scarce, being quoted at parity of 30s. to 32s. per cwt. landed terms, but there appears to be difficulty in securing good root at all, in any quantity.

GINGER,—No sales effected in auction. Washed rough *Cochin* bought in at 35s., cut, 48s. to 62s.; limed *Japan*, 15s. to 16s.; *Bengal* at 15s.

MENTHOL.—Market quiet, but better demand expected, when it seems practically certain that value will advance, present price being 8s. to 8s. 6d. per lb. for spot, according to quality and brand.

MORPHIA—Quiet and unchanged at 5s. per oz, for the powder in quantity; crystals 2d. per lb. more.

MUSK—Fine quality remains very scarce and 85s. to 90s. would probably have to be paid for fine blue skins of Pile I.

ESSENTIAL OILS.—*Aniseed*: Market quiet with spot sellers at 7s. 9d. per lb. *Cassia* quiet with only retail sales; good quality is scarce on spot at 7s. 9d. to 8s., but is offering forward at 7s. per lb. *c.i.f.* *Citro-*

nella, steady at 1s. 2d. to 1s. 3d. per lb. in drums. *Cinnamon*: Good oil is scarce and enquired for; ordinary fair sweet is quoted 4d. to 1s. 3d. per oz.; good to fine, nominally 2s. to 7s. 6d. per oz., latter for finest *English drawn* quality.

Oils (Fixed and Spirits).—*Castor* continues very firm. *Linseed*: The market continues very quiet at £15 7s. 6d. to £15 10s. for pipes, and £16 to £16 2s. 6d. for barrels, with a premium of 5s. per ton guaranteed drawn solely from East Indian seed. *Rape* neglected at slightly lower prices, refined being now quoted £27 10s. to £28. *Cotton* is steady on the spot at £14 15s. to £15 15s. for refined according to make and package; for forward delivery market is firm. *Cocoanut* quiet but steady at £23 15s. for *Ceylon* on the spot, and £28 for *Cochin*. *Palm*: £23 10s. for *Lagos* on the spot. *Turpentine* is lower, and a very quiet feeling prevails: *American*, on the spot, 20s. 3d. to 20s. 4½d. per cwt. *Petroleum oil* is again slightly easier: *American*, on the spot, 5$\frac{7}{16}$d. to 5½d. per gallon; *Russian*, spot, 4$\frac{15}{16}$d. to 5d. per gallon. *Petroleum spirit* quiet at 7¾d. to 8d. per gallon; *deodorised*, 8¼d. to 8¾d. per gallon.

Opium.—Steady with a not very active demand. Prices are:—*Manufacturing*, 8s. to 9s.; *druggist's*, 8s. 6d. to 9s. 6d.; *Persian*, 9s. 6d. to 11s. 3d.; *soft shipping*, 11s. 3d. to 13s. 9d. per lb.

Orris Root—Good quality is firm, and selected *Florentine* is quoted 68s., small white 64s., and sorts 63s. per cwt., *c.i.f.* terms. *Verona* in sorts is steady at 52s. per cwt., *c.i.f.*, London. *Florentine powder* for soapmakers' use 100s. to 106s. per cwt., *c.i.f.*, according to quality and packing.

Potash Compounds.—*Chlorate* is dearer at 4½d. per lb. on the spot, but for shipping quantities 4¼d. per lb. would probably be accepted on *f.o.b.* terms. *Bichromate*: Unchanged at 4¾d. per lb. *Prussiate*: Dull at 6¼d. per lb. for ordinary *English*, whilst *Beckton* is to be had at 5¼d. per lb. *Bicarbonate*: Steady at 30s. per cwt. *Permanganate* is quiet at 72s. 6d. per cwt. for small crystals, and 77s. 6d. per cwt. for large crystals. *Cyanide* closes firmer. It is said there is a probability of an arrangement between the various makers, under which higher prices will rule in the coming year.

Podophyllin.—Quiet, prices asked ranging from 13s. to 15s. for Ph.B. quality, according to make, etc.

Quicksilver—Is rather lower in second-hands at £6 10s. per bottle, first-hands remaining at £6 12s. 6d. per bottle.

Quinine—Quiet, with but little doing, the season of the year, combined with some uncertainty as to the immediate future of the article, causing buyers to hold off as long as possible, and then to buy mostly only from hand to mouth makers. Prices remain unchanged at 9⅜d. for *German* bulk for 1000 oz. lots., *English* makers quoting ½d. per oz. more.

Salicine.—Makers' pri ces are 10s. per lb for cwt. lots.

Scammony.—*Virgin* quiet, with no firsts offering. *Resin*: *English* offering at 8s. to 8s. 6d. per lb., according to quantity; *German* being about 6d. per lb. cheaper.

Soda Compounds.—*Crystals* are steady, 42s. 6d. per ton being still the *ex* ship quotation. *Bicarbonate* unchanged at 7s. 3d. to 7s. 6d. per cwt. for the 99 per cent. quality, and 17s. 6d. to 18s. for the free from monocarbonate. *Nitrate* slow of sale at £8 5s. for *refined*. *Caustic*, 70 per cent. white is unchanged at £8 per ton, whilst 60 per cent. can be had at £7 per ton in quantity.

Shellac.—The demand during the week has been small, a few sales having been made at steady prices. Holders are firm. At the sales on Tuesday supplies were very moderate; only 582 cases were catalogued, of which but a small proportion sold at a further decline of 1s. per cwt. *Fine Orange*: 1 case sold 100s. cwt. *Second Orange*: 55 cases fine sold: Good bright free at 88s. to 89s. per cwt. *TN*: 65 cases sold: Fair flat red at 79s.; ordinary livery reddish, 75s. to 76s.; and fair bright blocky at 75s. per cwt. The next auctions will not take place until January 12, 1897.

Spices (Various)—Quiet, with very little business doing. *Capsicums*: 62 bales *Japan* bought in at 15s. to 18s. *Chillies*: 3 cases *Japan* sold; bright red, 50s.; mixed, 41s.; *Zanzibar* bought in at 36s. *Cinnamon*: A few bags *Ceylon chips* sold at 2⅞d. to 3d., but greater part bought in at this price; 9 bags good *quillings* sold at 8d., and 1 case broken quill at 10d. *Mace*: 2 cases *Penang* sold at 1s. 4d., and 1 case *Bombay* at 1s. 2d. *Nutmegs*: 11 cases *Penang* sold, 64's at 2s. 10½d., 79's at 1s. 8½d.; also 59 packages *Banda*, 84's at 1s. 8d., 121's at 1s., and 4 cases *Bombay*, 85's at 1s. *Pepper*: Small sales at 2¼d. to 2½d. *White Pepper*: None in sale; for delivery, *Penang*, 3½d. to 3¾d.; *Singapore*, 4⅛d. to 4¼d. *Pimento*: 135 bags sold at 2¼d.

Sugar of Milk.—The quotations or *Italian powder* are firm at 68s. 6d. to 70s. per cwt., and for *American powder*, 67s. 6d. to 69s. 6d. per cwt., according to quantity, the former being packed in cases of 1 cwt., and the latter in barrels of about 200 lbs. each.

Sulphate of Copper.—Steady but quiet. On the spot £17 to £17 15s. per ton, according to brand and quantity.

LIVERPOOL REPORT.

December 16, 1896.

The general state of the market here continues dull, and the week's sales contain but few points of interest. Kola nuts have been selling in good quantity at low prices for good dry samples. Small transactions are reported in Turkish canaryseed at last week's rates, and also in African beeswax. Cream of tartar has become firmer and exhibits a tendency to rise. The prices for castor oil, olive oil, linseed oil, cottonseed oil, and spirits of turpentine have not suffered any material alteration since last week.

Ammonia Carbonate—Is steady at 3d. per lb.

Ammonium Sulphate—Likely to drop in price—£7 10s. to £7 13s. 9d. per ton.

Arsenic—Is dearer: *Powder*, £23 10s. per ton; *lump*, £28 per ton.

Beeswax.—15 packets of *Sierra Leone* at £5 15s. per cwt.

Bleaching Powder—Is selling well at £6 10s. to £6 12s. 6d. per ton.

Borax—Steady at 20s. per cwt.; *powder*, 21s.

Canaryseed—Is somewhat neglected, but 500 bags of *Turkish*, December shipment, have been sold at 28s. 6d. per 464 lbs. The spot price for *Turkish* is 29s. per 464 lbs.

Copperas—In good demand at last week's prices, viz., *Lancashire*, 38s. per cwt.; *Welsh*, 36s.

Copper Sulphate—Is quiet at £17 12s. 6d. to £17 15s. for prompt delivery; forward, £17 15s. to £18.

Cream of Tartar—Is very firm at 81s. per cwt., and is likely to be higher.

Kola Nuts.—110 packages of fair dried sold at 3½d. to 3¾d. per lb.

Oils (Fixed).—*Castor oil* is quiet at last week's rates, and sellers do not appear anxious to meet buyers. *Calcutta* good seconds is selling at 3¾d. per lb., and *French* and *Madras* at 3½d. *Olive oil* is selling well at good prices; *Seville*, £28 to £29 10s. per tun; *Malaga*, £29 10s. to £30. *Linseed oil*: *Liverpool* pressed is still at 16s. 3d. to 17s. 6d. per cwt. *Cottonseed oil*: *Liverpool* refined is not altered from last week, viz., 15s. 9d. to 16s. 3d.; *American*, 17s. 6d. per cwt. *Spirit of turpentine* cannot bring more than 21s. per cwt., and is only selling quietly.

Potashes—Are somewhat improved in price, and now sell at 21s. 3d. to 21s. 6d. per cwt.

Pearlashes—Are unchanged, viz., 32s. 6d. to 35s. per cwt.

Potash Bichromate.—4⅝d. per lb.

Potash Prussiate—Has dropped ½d. per lb., and 6¼d. is now asked.

Potash Chlorate—Has experienced a slight advance; 4¼d. per lb.

Sal Ammoniac.—37s. and 35s. per cwt.

Saltpetre.—23s. per cwt.

Sodium Bicabonate.—£6 15s. per ton.

Soda Crystals.—£2 7s. 6d. per ton.

Soda Caustic.—70 per cent., £7 5s. to £7 10s. per ton; 60 per cent., £6 5s. to £6 10s.

Sulphur—Is dearer. *Roll*, £6 per ton; *flour*, £7 10s.; *recovered*, £4 18s. to £5 per ton.

NEWCASTLE REPORT.

December 16, 1896.

This market, on the whole, remains unchanged. Soda crystals, if anything, are in better request for down Channel markets. Sulphur and one or two other articles keep scarce. South Durham salt steady. Prices thus:—*Soda crystals*: 37s. 6d. to 45s. *Bleaching powder*: £6 10s. to £7 10s., according to markets. *Caustic soda*: 76 to 77 per cent., £9 to £9 5s.; 70 per cent., £7 10s. to £7 15s. *Sulphur*: £5, *Alkali*: 48 per cent., £4 17s. 6d. *Hyposulphate of soda*: £6 5s. to £7. *South Durham salt*: 9s. per ton, *f.o.b.*, Tees.

MANCHESTER REPORT.

December 16, 1896.

There have been few changes since last week, and, as usual at this time of the year, the market remains in a state of quiescence. Prices are well maintained, and in minor articles one or two fractional advances have taken place. *Chlorate of soda* is at 5¼d. per lb. for home consumption, and for export much the same figure is asked. *Lime salts*

are somewhat easier, but without change in price, and *Sulphate of copper* is in about the same position. *Ammonia alkali*, 58 per cent., is about 2s. 6d. per ton lower, and *Soda crystals* are very dull. *Sulphate of ammonia* is very low, and sellers appear to be expecting almost any figure, an unauthenticated price of £7 6s. 6d., Leith, having been recorded. Current rates are, however, £7 7s. 6d. to £7 10s. at that port. *Naphthas* are quiet, but without change in prices, and the same may be said of *Benzols*. *Alum* is firm. *Yellow prussiate* is unchanged, and local makers are indisposed to sell at present low prices. *Aniline oil* and *salts* are rather easier.

NEWS IN BRIEF.

** **Several of the following items of news were unavoidably held over last week.**

MACKENZIE'S ARSENICAL TOILET SOAP must be a variable compound, for whilst Mr. E. Bevan—at Brentford Police Court, on Saturday last—said he found it to contain 1/100th of a grain of arsenic in the pound (see Journal, p. 541), Dr. Stevenson asserted, at Richmond Petty Sessions, on Thursday—when Mr. J. W. Taplin, chemist and druggist, of Kew Gardens, was charged with a breach of the Food and Drugs Act—that a sample he has examined contained none. The Bench decided that arsenical soap is a drug, but agreed to an adjournment to enable a sample to be sent to Somerset House for analysis.

THE PROPRIETOR OF JAMESON'S ARSENICAL SOAP directs attention to the fact that his preparation contains a uniform percentage of arsenic, and that he is willing to defend and indemnify chemists who sell the soap, in the case of any proceedings taken against them, in respect to such sale, under the Food and Drugs Act or the Pharmacy Act—provided always that they have fulfilled the statutory obligations.

THE WESTERN CHEMISTS' ASSOCIATION (OF LONDON) held a meeting on Wednesday, when Mr. J. W. Taplin delivered his inaugural address as President. In the course of this he referred appreciatively to the idea of making chemists and druggists eligible for full membership of the Pharmaceutical Society.

MR. HEINRICH HAENSEL, of Pirna on the Elbe, has been awarded a diploma of honour—the highest distinction—by the jury of the Second International Pharmaceutical Exhibition at Prague, for his terpeneless and other essential oils, etc.

THE BRADFORD AND DISTRICT CHEMISTS' ASSOCIATION, having decided to co-operate only with those proprietors of nostrums who join the P.A.T.A. and consent to have their articles put on the protected list, the Charles A. Vogeler Co. has retorted by intimating the fact in a circular inserted in a calendar which is gratuitously distributed in the district, and recommending the public not to accept substitutes for the Company's preparations, "as such will only be offered by unprincipled chemists, whose sole object is that of gain." The assumption apparently is that the C. A. V. Co. is actuated by philanthropic motives, pure and simple.

PHARMACEUTICAL SOCIETY OF IRELAND. The last days for receiving applications for the January Examinations will be as follow:—For the Preliminary Examination, Monday, 21st. inst.; Pharmaceutical Assistants, 28th; Registered Druggist (at both Belfast and Dublin), Tuesday 29th; Pharmaceutical Licence, Wednesday 30th.

PHARMACEUTICAL FOOTBALL CLUB *v.* "MUTER'S."—This match, played on Saturday last at Wormholt Farm, resulted in a win for the home team 4 to nil.

TEAM:—Lean, goal; Jones and Miles, backs; Nelson, Webster, and Smith, half-backs; Day, Tebbutt, Fothergill (centre), Happold and Jackson, forwards.

Owing to the vacation commencing on December 19, the return match arranged for that date has been postponed.

DR. A. B. GRIFFITHS has been appointed Lecturer on Metallurgy to the National Dental Hospital. The appointment will not interfere with his duties at the Brixton School of Chemistry and Pharmacy.

THE LIMERICK BOARD OF GUARDIANS decided recently to purchase an apparatus for X rays, but in view of the fact that they can employ a local chemist to do the work at a guinea each time, the guardians have abandoned the purchase. This suggests a new and profitable extra for the pharmacist.

HUNYADI JANOS WATER.—The *Lancet* of December 5 publishes an interesting report of the special analytical commission on natural mineral waters; the Saxlehner Springs whence the Hunyadi Janos Water is derived being the subject of the report. Illustrations are given of the general view of the springs, the interior and exterior of the well-house with pumps in position, and the interior of the filling house, showing filling, capsuling, and labelling.

MR. F. E. FITT has sold his business at 69, Beach Street, Deal, to Mr. W. H. Humfrey, and purchased that of Mr. Spurin, (late Ray), 5, Peckham Rye, S.E.

THE EMPLOYÉS OF MESSRS. COCKBURN AND CO., wholesale druggists, Glasgow, held their annual festival in the Cockburn Hotel, Bath Street, on Wednesday, the 9th inst. Dancing was begun under the able direction of Mr. Surgenor at 8 p.m., and maintained, with occasional intervals for music, until 10 p.m., when the company, to the number of over seventy, sat down to an excellent supper, Mr. C. T. Cockburn, the head of the firm, occupying the chair. Subsequently the company retired to the dancing hall, where justice was done to an attractive programme, dancing being kept up until 2 a.m.

PATENT MEDICINE VENDORS' DEFENCE ASSOCIATION (LIMITED).—At the annual general meeting, held at the Victoria Hotel, Manchester, on Wednesday, December 9, correspondence was read with regard to the anti-cutting scheme, and after a long discussion it was resolved—"that we strongly repudiate the action of the Proprietary Articles Trade Association, and are of opinion there will always be loopholes wherewith supplies will be obtained; and consider it most improbable they will be successful in their efforts to force up prices, and to compel all dealers to sell at one price."

SALE OF RAT POISON.—An inquest was held on December 10, at the Three Queens hotel, Weston-super-Mare, on the body of John Chard, who died the previous Tuesday, from the effects of poison. The evidence showed that deceased had purchased a sixpenny packet of rat poison from an unregistered person, named Leonard Dale, carrying on business at 76, Meadow Street. A verdict of "suicide by taking poison whilst in a state of temporary insanity," was returned, and the coroner severely criticised the action of Mr. Dale, who had broken the law by selling poison without obtaining the purchaser's signature.

BELLADONNA LINIMENT, put up in a medicine bottle at the Union Infirmary, caused the death of Catherine Hayman, 74, a widow, of 25, Eldon Street, Southsea. It transpired at the inquest that patients take their own bottles to the dispensary, and the deceased, who suffered from rheumatics, was in the habit of taking medicine and using the liniment by applying it to her shoulder, but on Tuesday, December 8, she drank the liniment in mistake for the medicine, with a fatal result.—Mr. W. A. Attree, the dispenser, informed the Coroner that in future he would see that all poisonous medicines were sent out in coloured bottles. He did not alter the regulations, but made suggestions, and he would suggest this to the Guardians.—The Coroner commented on the method of issuing poisonous drugs from the Guardians' offices. He was glad to hear that the system would be altered. A verdict of "Death from misadventure" was returned.

MR. WILLIAM TOWNSEND, son of Mr. James Townsend, the well-known medical label printer, of Gaudy Street, Exeter, has been presented by the employés of the firm with a handsome silver-plated tea and coffee service, on the occasion of his approaching marriage with Miss McLean. Mr. W. H. Dalgleish, the manager, made the presentation, and Mr. James Townsend and Mr. William Townsend returned thanks for the complimentary references that had been made respecting them.

TH APPLICATION OF ELECTRICITY to practical use has rapidly advanced in Japan, and regulations have been issued by the Minister of State for Communications for the control of the various projects being carried out. The *Indian Engineer* remarks that there is an evident boom in telephones, which are being extended to all parts of the country. In fact, in the matter of telegraphs and telephones it is probable that in some respects Japan is further advanced than Britain. The Japanese have despatched a commission of electrical experts to America for the purpose of studying all the most recent developments in that country, so that they may be utilised in Japan.

EXCHANGE—OFFERS AND WANTS.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Books, etc.

'British Medical Journal.'— Advertiser desires to exchange this on Friday following issue for 'Spectator' of corresponding date.—Frederick March, Westgate-on-Sea.

3s. 6d. each, free.—Dr. Thomson's 'London Dispensatory'; Dr. Thomson's 'Materia Medica'; Gray's 'Operative Chemist'; Ure's 'Dictionary of Chemistry'; Liebig's 'Chemistries,' 2 vols; Cooper's 'Surgical Dictionary.' All published over 20s.—Davis, 'Chestnuts,' Gordon Hill, Enfield.

'Pharmaceutical Journal,' vols. 1 to 18; 1 to 6 bound in red leather; 7 to 18 half-bound red and marbled; Index (1857, half-bound), first 15 vols. Vols. 1 to 6 second series (half-bound); 'Progress of Pharmacy,' Bell and Redwood, 1880; Report Fifth International Pharmaceutical Conference, 1881; 'Year-Books of Pharmacy,' 17 vols., 1874 to 1890; all good condition; offers?—Gudgen, Chemist, Chiswick.

OFFERED—(*continued*).

Miscellaneous.

Three Gas Chandeliers, 5-light, 2 3-light, quite sound, very neat; 1½ doz. Imperial Hand Fire Grenade Extinguishers; what offers?—Bennett, Chemist, Widnes.

Magic Lanterns, second-hand; Wrench's telescopic triple and biunial; Ladd's oxyhydrogen microscope; grand biunial patent pamphengos oil; lantern, gives 14-ft. picture; slides and effects, bargains; illustrated list post free, 2d.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

Great bargain in Laurance's spectacles, namely, 16 10s. 6d. biconvex pebbles, 22 5s. 6d. periscopic crystal, 12 3s. 6d. short-sight spectacles, all less 60 per cent. discount.—Apply Gratton, Chemist, Blaenau Festiniog.

Surplus Stock.—7 lbs. pulv. extract coloc. co., in 1-lb. lever-lid tins; 1 lb. and upwards at half wholesale drug-list price; in perfect condition.—Worsley, Chemist, Market Place, Wigan.

OFFERED—(*continued*).

Photographic Apparatus.

"X" Ray Lantern Slides, 16 splendid subjects, 6d. each; Fluorescent Cyanide for making your own screens, 5s. per ounce.—Pickering, Chemist, Leicester.

WANTED.

Would buy for cash and remove contents of small general laboratory, or quantity of useful analytical apparatus and microscope. Details to—East Hill Laboratories, S.W.

Wanted.—Squire's 'Companion,' latest edition; surplus drugs, patent medicines, etc.—Rogers, Church Road, Normanton, Yorks.

Wanted.—Allen's 'Commercial Organic Analysis,' either complete series or separate volumes.—Braithwaite, The Rhydd, Twickenham.

Wanted.—Morris's 'Primer of English Grammar,' Edmond's 'Elementary Botany,' Latin Pharmacopœia, 1851 edition, 'Grammaire des Grammaires,'—Martin, 313, Sydenham Road, S.E.

MESSRS. REYNOLDS AND BRANSON, chemists, 13, Briggate, Leeds, have suffered from a fire on their premises, that threatened at one time to develop into a serious conflagration. On the arrival of the fire brigade, they found a quantity of crates and hampers in the cellar-area on fire and burning fiercely. A jet having been got to work from the street main, a very short time sufficed to extinguish the flames, and the damage is comparatively small.

SOCIETY OF CHEMICAL INDUSTRY.—At the monthly meeting of the Liverpool section, held at University College, Mr. Arthur Carey read a paper on "Rescue Apparatus" recently introduced for use amongst noxious gases, the efficiency of the apparatus depending largely on the absorptive power of a material whose production is due to Mr. Towers, of Widnes. Following on Mr. Carey's paper came an interesting communication by Mr. Douglas Herman concerning cases of poisoning by carbonic oxide, and on the use of oxygen gas as a restorative in such cases. Mr. Herman also read a contribution on a substitute for tartaric acid in the preparation of effervescent beverages, and Mr. W. A. Caspari described some of the chemical uses of a recently-produced material, thio-acetic acid.

A CHEMIST'S ASSISTANT DROWNED.—A dead body was found on the shore of the Solway, in Newabbey Parish, on Tuesday afternoon, December 1, and it has been identified as that of Mr. John Hume, of Dalbeattie, a young chemist's assistant, who had recently been studying in Edinburgh.

A FATAL EXPERIMENT.—At Olney, on Wednesday, December 2, a young man named Munro Field, aged eighteen, a technical scholar, was found dead in his cellar, which he had fitted up as a laboratory. He appears to have been knocked down by an explosion of acetylene gas and rendered insensible, and subsequently poisoned by carbonic acid gas produced by the explosion.

MR. HERBERT W. SEELY, of Halifax, always alive for novelties, has had prepared a tiny thermometer, prettily mounted on a banjo-shaped frame, lined with plush.

MR. ALEXANDER STEPHENSON STEWART, pharmaceutical chemist, has purchased the business of the late Mr. Nicol, East Linton.

ROYAL INSTITUTION.—A general monthly meeting of the members of the Royal Institution was held on the 7th inst., Sir James Crichton-Browne, M.D., F.R.S., Treasurer and Vice-President presiding. The following were elected members:—The Hon. and Rev. William Byron, Sir Gervas Powell Glyn, Bart., Dr. Alexander Scott, Mrs. T. B. Sowerby, and the Rev. Samuel A. Thompson-Yates. The special thanks of the members were returned to the Duke of Northumberland, K.G., President of the Institution, for a donation of £200 to the fund for the promotion of experimental research at low temperatures; to Colonel Coleridge Grove for a bust of his father, the late Sir William Grove, M.R.I.; and also to Professor Dewar for a marble pedestal for the bust.

A NEW ENGLISH INDUSTRY is reported as likely to be the probable outcome of a process devised by Mr. J. S. Rigby, of Wavertree, near Liverpool, for the manufacture of vegetable parchment. Paper of this sort has hitherto been chiefly made abroad, but Mr. Rigby believes he has surmounted the difficulties that have prevented the development of similar business in this country, and the erection of works is contemplated in the Thames, Clyde, and Tyne districts.

DISINFECTING FLUID, is supposed to have caused the death of Mrs. Ellen Harral of Cross Church Street, Huddersfield, but as some doubt exists as to the nature of the liquid which Mrs. Harral drank, the inquest was adjourned until Thursday, December 17 for a post-mortem examination of the body and, if necessary, an analysis of the contents of the stomach to be made.

MESSRS. A. S. HILL AND SON, and Messrs Davy, Yates, and Hicks, two old-established firms, will amalgamate on January 1 next, and carry on business at both addresses, viz., 101, and 103, Southwark Street and Park Street, S.E., under the style of Davy, Hill and Son, Yates and Hicks; the partners being then Mr. Arthur Bowdler Hill, Mr. Robert Yates, Mr. Alan Hicks, and Mr. Charles Alexander Hill. Mr. Francis Yates, senior partner in the firm of Messrs. Davy, Yates and Hicks, will retire from business at the end of the year, followed by the regrets and best wishes of all who have had the pleasure of coming into personal communication with this gentleman.

DIARY OF THE WEEK.

MONDAY, DECEMBER 21.

EDINBURGH PHARMACY ATHLETIC CLUB.

Fifth Annual Smoking Concert in the the West End Café, Princes Street.

LATE ADVERTISEMENTS.

Assistants Wanted.

JOHN BARKER & CO. (Limited), Kensington, W., are in want of a DISPENSER; also a Counter ASSISTANT. In-doors. Close at 6.30, 2 o'clock Saturdays. Personal application necessary.

JUNIOR Counter ASSISTANT. Qualified. Out-door. Apply by letter, in first instance, giving full particulars and enclosing carte de visite, to FRANK A. ROGERS, 327, Oxford St., W.

Business for Disposal.

CHEMISTS AND SURGEONS. — Drug Stores, Shop, Consulting Room and Offices en suite on ground floor. 4 good rooms above. 1 mile south of London Bridge. Moderate rent. Densely populated neighbourhood. Good profits. £160 (all at). Principals or their solicitor only. JOHN CURTIS, Solicitor, 54, New Broad St., E.C.

« Market Report »

And Prices Current of Drugs, Chemicals, Oils, and Seeds.

The quotations here given are in all cases the lowest cash prices for bulk quantities, and often the articles quoted have to be sorted in order to suit the requirements of the retail pharmacist. The cost of freightage from the chemical and drug works to the various distributing centres must also be considered. It is important that these conditions should be borne in mind in making any comparison between the prices quoted and those of the wholesale drug trade.

[Specially Compiled for the 'Pharmaceutical Journal.']

LONDON REPORT.

DECEMBER 23, 1896.

There has been more doing this week than was generally expected, enquiries being fairly numerous both from the home trade and from export agents. Cardamoms are arriving freely and lower prices in the next drug auctions seem probable. Asafœtida—London stocks have been added to by an arrival from Bombay, and buyers are holding off for the moment. Senega root is tending higher. Spermaceti also has an upward tendency. Glycerin is a dull market. Cream of tartar is dearer. Chlorate of potash continues very firm. Balsam copaiba is again dearer, and but little stock is available. Balsam tolu, on the other hand, is again weaker. Crude camphor is much weaker for arrival, but the refined is unchanged in value, although very quiet. Colocynth: Some quantity has changed hands since our last, but prices do not harden. Curaçao aloes are in a stronger position, and the same applies to socotrine. Acacia gum seems to be in a stronger position for the immediate future than was at one time thought. Benzole is tangibly lower, which will no doubt prove very disappointing to those who have bought forward at the higher prices. The following are actual quotations for articles of chief interest:—

ACID CARBOLIC—Inactive at about late values, say on basis of 7d. per lb. for 35° *ice cryst.* in bulk, packing.

ACACIA (GUM).—For *picked* qualities the demand is very limited, although stock is small. *Turkey sorts* are very quiet, business having been on a small scale, holders' ideas being too high to tempt buyers; nominally price of good soft is 85s. to 90s. per cwt. *Amrad* is scarce and worth nominally 35s. per cwt. A small lot has just arrived.

ACID, BORACIC.—The prices of the Combination are unchanged at 35s. per cwt. for *crystals*, and 32s. per cwt. for *powder*, with slightly lower quotations from outside makers.

ACID CITRIC—Is a very quiet market, and only a few small transactions have taken place at 1s. 1d. to 1s. 1¼d. per lb. *Concentrated juice* is dull at £13, *f.o.b.*

ACID TARTARIC—Is quiet and unchanged at 12½d. per lb. for *English*, and 11¾d. per lb. for *Foreign*.

ALOES.—*Curaçao* are in a better position than for some time past, first-hand stocks in New York having been cleared. Shipments from Curaçao have been unimportant, and higher prices in the new year seem probable. The stock of *Socotrine* appears to be now considerably reduced, and to be practically concentrated in the hands of two holders, one of whom, having made sales at 90s., now talks of advancing his price to 100s. per cwt., while the other holder is apparently asking considerably more money. It is not very long since this quality could be readily secured at 70s. per cwt., or even below this.

AMMONIA COMPOUNDS.—*Sulphate*: Is firm at dearer rates, £7 13s. 9d. per ton being now quoted for grey prompt 24 per cent., London. Hull, £7 10s. prompt. Beckton terms prompt, £7 12s. 6d. per ton. *Muriate*: *Chemically pure small crystals*, 35s. per cwt.; *large crystals*, 40s. per cwt.; free from metals, 98 to 99 per cent, 28s. and 33s. per cwt., for small and large crystals respectively. *Sulphocyanide*: 1s. to 1s. 1d. per lb, according to quantity, in 1 cwt. kegs, in cases of 4×28 lb. jars 1½d. per lb. extra.

ASSAFŒTIDA.—An arrival of 110 cases by the "Peninsular" steamer has caused some dulness in the market, but this arrival is supposed to be the stock held in Bombay by the firm which lately operated on this market, and which has been shipped here owing to the outbreak of the bubonic plague in Bombay and the natural desire of the leading firms to escape to the hills after settling necessary affairs. So far there is no reliable information as to any shipments of new gum, either from the Persian Gulf or India.

BALSAM (CANADA)—Is a quiet market, barrels being quoted at 11d., and tins and cases 1s. per lb. *c.i.f.* London. Present prices seem worthy of attention, as it is said the production is likely to be small next year.

BALSAM, COPAIBA—Is very scarce and again dearer at 3s. per lb.

BALSAM PERU—Is lower at 7s. 3d. per lb.

BALSAM TOLU.—There have been further arrivals in New York, and our market is weaker in consequence. Nominally 2s. 2½d. per lb. is asked, but less would probably be accepted.

BIRD-LIME.—Importers are firm at 7½d. per lb. for *Japan*, a good business having been done lately in the article.

BLEACHING POWDER—Is quiet at 7s. 6d. to 8s. per cwt., according to quantity.

BORAX—Unchanged at 20s. per cwt. for *crystals*, and 21s. per cwt. for *powder*.

CAMPHOR.—There has been no change in *refined* this week, but *crude* is decidedly weaker for arrival. The article has been offered at 95s. per cwt., *c.i.f.* terms without finding buyers, but spot prices are unchanged at 107s. 6d. per cwt. for *China*, and 117s. 6d. per cwt. for *Japan*.

CARDAMOMS.—The arrivals have been large, and the quantity offered in our next drug sales on the 7th prox. will probably lead to a further reduction in prices.

CINCHONIDIN SULPHATE—Continues firm at 5⅝d. to 5⅞d. per oz., in quantity. It appears that the bulk of the cinchona bark now used by quinine manufacturers contains very little cinchonidin.

CHLORATE OF POTASH.—The "Union" are having it all their own way, in face of the fire at the Swedish factory, which will prevent any competition from this quarter for at least two months. The market is very firm at 4½d. per lb., delivered London. For good shipping quantities, *f.o.b.*, Liverpool, 4¼d. per lb. is asked.

COAL TAR DISTILLATION PRODUCTS.—*Toluol*, 2s. per gal. *Benzole*, 50 per cent., 2s. 2d. per gal.; 90 per cent, 2s. 6d *Crude naphtha*, 30 per cent. at 120° C., 1s. 4d. per gal. *Solvent naphtha*, 95 per cent. at 160° C., 1s. 9d.; 90 per cent. at 160° C, 1s. 6d., and 90 per cent. at 190° C., 1s. 2d. per gal.

COCA LEAVES.—The stock of *Truxillo* is an abundant one in New York, and are offered thence at the low price of 7½d. per lb., *c.i.f.* terms.

COD-LIVER OIL—Is exceedingly dull; finest *Norwegian* of this year's crop is quoted at 155s. per barrel, with lower offers down to 135s. barrel, according to quality and brand. There is some talk of new crop being offered at lower prices, but we think this is rather premature, for well prepared oil, at any rate.

COLOCYNTH.—A considerable business has been done since our last report in *Turkey*, it is said, for export to America, some 40 to 50 cases having changed hands at 2s. per lb. for good quality.

CREAM OF TARTAR—Is dearer for spot delivery, *firsts* being quoted 82s. per cwt. for *crystal*, and 84s. per cwt. for *powder*.

GALLS.—The demand for *Blues* has fallen off, and price is quite nominal at 50s. per cwt. *Greens* are very scarce, business having been done to a small extent at 42s. to 45s. per cwt. *Whites* are also very scarce, and the small stock is held above market value, which is 37s. 8d. to 42s. 6d. per cwt. These quotations are for Busreh, Smyrna qualities being rather lower.

Glycerin—Is exceedingly dull, with buying from hand to mouth only. One English brand is quoted as low as 67s. 6d. per cwt. It is thought that with the turn of the year a better demand will spring up, when higher prices may rule.

Gum Kino.—The little lot offered in the last drug sales has since been sold at 10s. per lb.

Ipecacuanha.—*Rio* is very quiet, a further arrival of 50 bales is noted this week. *Carthagena* quality is in small supply, and 4s. 6d. to 4s. 7d. per lb. is asked.

Lead Acetate.—Good white crystals are quoted 23s. to 23s. 6d. pet cwt.

Lobelia Inflata.—Stocks both here and in America are very light. From New York quotations come higher, being 6¼d. per lb. in packets, and 4d. per lb. loose, both quotations being *c.i.f.*, London.

Mastic (Gum).—New crop is arriving, but although importers are anxious to make sales, buyers hold off. Clean pale tear is worth 1s. 4d. per lb., milky and yellow 1s. to 1s. 1d. per lb.

Menthol—Is steady at 8s. per lb. on the spot, and 7s. to 7s. 3d. per lb. *c.i.f.* terms for arrival.

Oils.—*Essential*: *Star anise* is very quiet at 7s. 6d. per lb. on the spot, with lower quotations for arrival. *Cassia* is dull of sale, 70 to 75 per cent. is not abundant on the spot, 9s. per lb. being asked in this position, but for arrival 7s. 6d. per lb., *c.i.f.* terms, is asked. *Citronella* is dull, 1s. 3d. per lb. is asked for both tins and drums, with sellers for arrival at 1s. 1d. per lb. *c.i.f.* *Lemon Grass* is steady at 2½d. to 2⅝d. per lb. on the spot. *Patchouli*: Leaves are very scarce, and a further advance in the oil seems probable. *Geranium* is lower, owing to reports of good crops. *Bourbon* is quoted 20s. per lb.; *African*, 21s. 9d. per lb.; *French*, 33s. per lb.

Oils (Fixed and Spirits)—*Castor* is firm but quiet at the moment. *E. I. firsts* are still quoted 4¼d. to 4½d. per lb, *seconds* 3¾d. per lb. *Italian*, of fine quality, on the spot 4¾d. to 5d. per lb., and to arrive in not less than 10 case lots 44s. per cwt. *French* of medicinal quality, 37s. 6d. per cwt. on the spot. *Linseed* quiet but firm at £15 7s. 6d. to £16 2s. 6d. per ton, according to package and quantity. *Rape* is steadier at £27 10s. to £28, for refiined on the spot. *Cotton* is dearer at £15 to £15 15s., according to make and package, for refined on the spot. *Cocoanut* unchanged at £23 15s. for *Ceylon*, and £28 for *Cochin* on the spot. *Turpentine*: more has been doing this week, and prices are a shade dearer at 20s. 6d. per cwt. for American on the spot, with dearer rates for future delivery. *Methylated spirit* is very cheap at the present time at 1s. 6d. to 1s. 6½d. per gallon for 64 op. for good contracts over next year. *Petroleum oil* is dull and lower at 5⅝d. to 5¾d. for American on the spot; water-white, 6⅝d. per gallon.

Opium.—This market continues very quiet, but holders are firm. Good to fine *soft shipping* being quoted at 12s. 6d. to 13s. 9d. per lb.; good to fine *Smyrna*, 9s. to 9s. 6d. per lb., seconds; *Druggists'*, 8s. 3d. to 8s. 9d. per lb., the main business transacted being in this latter description. *Persian* quiet at 9s. 9d. to 10s. 9d. per lb.

Podophyllin Resin—Quiet but firm at 15s. per lb. for B.P. quality. It is thought that when demand again sets in higher prices will have to be paid.

Podophyllin Root—Continues very scarce, and is quoted 5¼d. per lb., *c.i.f.*, London.

Potash Compounds.—*Cyanide*: For good shipping quantities it is still possible to buy at something below 1s. per lb. for the 98 to 100 per cent. quality. *Permanganate* is quiet at 70s. to 72s. 6d. per cwt. for small crystals, and 5s. per cwt. more for large crystals. *Red Prussiate*: 1s. 2¼d. to 1s. 3d. per lb., according to quantity. *Yellow Prussiate*: Very dull at 6d. to 6¼d. per lb. *Oxalate*: *Neutral*, 4¾d. to 5d. per lb.

Quicksilver.—Slightly firmer in second hands at £6 10s. 6d. per bottle, £6 12s. 6d. remaining the price from importers.

Quinine—Is fairly steady at 9d. per oz. from second hands for recent make, for old stock rather less might be accepted.

Senna.—About 500 bales *Tinnevelly* will be offered in the first sales of the new year on the 7th prox. *Alexandrian* leaf has been sold in small quantity at 1s. per lb. for fair leaf.

Shellac.—The market remains very quiet, with lower prices and business in all positions very small. *Second Orange*: Buyers at 72s. 6d. per cwt. for Nov.-Jan. steamer, sellers asking 73s. per cwt.

Senega Root—Is tending higher, the crop being small and the stocks concentrated. *Minnesota* is quoted 1s. 2¾d. per lb, *Manitoba* 1s. 2½d. per lb., and *Southern* 1s. 6½d. per lb., *c.i.f.* terms.

Silver Nitrate—Dull at 1s. 8½d. to 1s. 9d. per oz. for *crystals*, and 1s. 9d. to 1s. 9½d. per oz. for *sticks*.

Soda Compounds.—*Hyposulphite* is dull of sale and rather easier at £5 10s. to £6 12s. 6d. per ton according to quantity and package. *Crystals* quiet at 42s. 6d. per ton *ex* ship London. *Caustic* quiet at £8 per ton for 70 per cent. white, and £1 per ton less for 60 per cent. *Bicarbonate* steady at £7 5s. to £7 10s. for the 99 per cent. quality, and 17s. 6d. to 18s. per cwt. for the free from mono-carbonate. *Acetate*: for *white crystals* 15s. 6d. to 16s. per cwt., and for the *chemically pure* 34s. to 35s. 6d. per cwt. are the nominal quotations.

Spermaceti—Is decidedly firmer at 1s. 5½d. per lb., and price is still advancing, one large American firm quoting 1s. 5d. to 1s. 5¼d. per lb. for *block*, and 1s. 5½d. to 1s. 5¾d. per lb. for *cakes*, both *c.i.f.* terms. Business has been done on the spot at 1s. 5½d. for *block*.

Sulphur.—*Roll* firm at £6 per ton; *flowers*, £6 10s. per ton; *Recovered* sulphur is quoted £4 15s. to £5 per ton, as to quantity.

Strophanthus Seeds.—These have been in rather better demand at from 3s. 4d. to to 3s. 6d. per lb. for green *Kombé* according to quantity.

Thymol—Very quiet at 6s. 9d. to 7s. per lb. according to quantity. The crop of seed is said to be small, and higher prices are asked.

Tonka Beans.—The abundant supplies of *Angostura* beans in New York are causing buyers to hold off the market, although holders are rather easier in their ideas, 7s. 9d. per lb. being the nominal quotation from second hands, whilst importers are holding for 8s. per lb.

Tragacanth (Gum).—Prices remain steady, but demand is limited, small sales only having been made since our last report. *Baghdad*: *Firsts* are quoted £14 10s. to £15 per cwt.; *seconds*, £13 to £13 10s.; *thirds*, £12 to £12 10s.; *fourths*, £9 to £11 per cwt. *Smyrna* qualities are difficult of sale, and only small sales of *seconds* at £10 10s. per cwt. have been made.

NEWCASTLE REPORT.

December 23, 1896.

With the approaching Christmas and New Year's holidays more attention is being paid at the local works to stocktaking and repairs. The trade as a whole remains quiet, with little new business in the immediate prospect. Prices are:—*Bleaching powder*, according to market, £6 10s. to £7 10s. *Soda crystals*: 37s. 6d. to 45s. *Caustic soda*: 70 per cent., £7 to £7 10s. *Soda ash*: 52 per cent., £4 5s. *Alkali*: 52 per cent., £5 5s. *Sulphur*: £5. *South Durham salt*: 9s. per ton, *f.o.b.*, Tees.

MANCHESTER REPORT.

December 23, 1896.

Although the market generally is quiet, there is a fair business passing on current account, especially in heavy chemicals. Both *Bleaching powder* and *Caustic soda*, especially high strength, are in good demand, but *Soda crystals* and *Ammonia alkali* are rather dull. *Chlorate of soda* is fairly firm at the recent advance to 5¼d., but under this is accepted for export. Lancashire *Yellow prussiate* has fallen rather, and 6d. to 6⅛d. is quoted. *Epsom* and *Glauber salts* are firm at late rates. *Brown acetate of lime* is in fair demand, *Welsh* being firm at £5, and *American* quoted £6 15s. *c.i.f.* It is noteworthy, however, that deliveries are being made *ex* stores at £4 12s. 6d. *Sulphate of ammonia* closes steady, and although £7 2s. 6d. has been named at Leith, this is looked upon as quite exceptional, and at Hull sellers are standing out for £7 10s. *White powdered arsenic* is in strong request at £25 10s. to £24 *ex* ship, Garston. *Pitch* ranges from 24s. to 25s. per ton, *f.a.s.*, Manchester. *Alum* is unchanged and firm at £5 2s. 6d. per ton lump in tierces and £5 12s. 6d. ground in bags. *Acids* are dull. *Green copperas* is steady at late rates. *Sulphate of copper* varies from £17 10s. to £18 for best brands delivered here.

LIVERPOOL REPORT.

December 23, 1896.

During the week sales have been fairly numerous, Chilian honey, beeswax, and quillaya bark finding buyers readily, and some small amounts of Turkish canary seed and Monrovian ginger have been disposed of. The price alterations are a drop of ½d. per lb. in castor oil, Calcutta "good seconds," and an advance of 1s. 6d. per cwt. in cream of tartar, which is very firm at present.

Ammonia Sulphate.—£7 10s. per ton.

Beeswax.—About 40 sacks of good average *Chilian* sold at £6 12s. 6d. per cwt., for the remainder £6 15s. is now asked.

Bleaching Powder—Is slightly dearer and is selling at £6 15s. to £7 per ton net.

Borax.—Steady at 20s.; powder, 21s. per cwt.

Canary Seed—Is still very quiet at 28s. to 29s. per 464 lbs., 100 bags of *Turkish* sold ex store at 28s. per 464 lbs.

Copperas—Is selling well at 38s. per ton for *Lancashire*, and 36s. per ton for *Welsh*.

Copper Sulphate—Unaltered from last week, viz., £17 12s. 6d. to £17 15s. per ton.

Cream of Tartar—Has advanced to 82s. 6d. per cwt. for finest white, and there is every probability of a further rise.

Ginger of the *Monrovian* class has been selling at 18s. 6d. per cwt.

Oils (Fixed).—*Castor oil* is somewhat irregular in price. *Calcutta* good seconds has dropped to 3¼d. and 3⅜d. per lb.; *Madras* to 3⅜d., and *French* first pressure to 3⅛d. to 3⅜d. Sales of *French* have been made at 3¼d. *Olive oil* is selling steadily at fully late rates, and really first-class oils are somewhat scarce. *Linseed oil* is in moderate demand at 16s. 6d. to 17s. 6d. per cwt. for *Liverpool* pressed. *Cottonseed oil* slow of sale at last week's rates for both *Liverpool* and *American*.

Potashes—Are again very flat at 21s. per cwt.

Pearlashes.—Merely nominal at 32s. 6d. to 35s. per cwt.

Prussiate of Potash.—6¾d. per lb.

Potash Bichromate.—4⅝d. per lb.

Potash Chlorate.—Quiet at 4¼d. per lb.

Quillaya Bark.—Four tons of *Chilian* found buyers at £14 10s. per ton.

Soda Crystals.—Quiet at £2 10s. per ton.

Soda Bicarbonate.—£7 per ton.

Soda Caustic.—70 per cent., £7 10s.; 60 per cent., £6 10s. per ton.

Sulphur—Is quiet at £7 10s. per ton for "flowers," and £6 for roll.

SOUDAN GUM ARABIC.

The following letter has been sent to the Editor of *The Public Ledger* with reference to the reports that large quantities of gum are arriving at Suakim:—

Sir,—It will, doubtless, be interesting to some of your readers to hear that the rumours of large arrivals of gum at Suakim, to be followed by still greater quantities in the near future, have been too extravagant to pass unheeded by the leading merchants of that country, and we have been favoured by the perusal of letters from most reliable sources which are entirely at variance with these reports. Herewith, translation of letter received.

Lambert and Strong.

TRANSLATION OF LETTER RECEIVED.

It is true that 200 serons have come from the Soudan—not 1000 as you have heard—but we also know that the Governor of Suakim has prohibited the entrance of this gum into Suakim, and has forced those who brought same to deposit it in a small place a day distant from Suakim, making it known to the importers that the Government continues to prohibit absolutely any commercial intercourse whatsoever with the Soudan, and not before the whole Soudan question will be settled will the sale of the above 200 bales be permitted, and this parcel, with the small quantity which arrived some time ago, will be kept until such time under the care of the Government. What we tell you is an absolutely reliable fact, the source from which we get our information admits of no doubt, and this information is to the effect that commercial intercourse with the Soudan is absolutely prohibited until the whole Soudan question is settled; most active preparations are being made towards the finish of the campaign, but the operations cannot be resumed again until July next with the rising Nile.

The Governor of Suakim has posted up in the town notices informing the inhabitants that the traffic is absolutely prohibited, and that whoever will contravene this Government order will be subjected to very severe penalties.

MARRIAGE.

Townsend—McClean.—On December 10, at the Parish Church of St. Leonards, Exeter, by the Rev. T. C. Bewes (Curate in charge at Dittisham, near Dartmouth, formerly curate of the parish) and the Rev. J. F. Medley (Curate), Mr. Wm. Townsend, eldest son of Mr. James Townsend, medical label printer, of Exeter, to Miss M. C. B. McClean, eldest daughter of the late Mr. McClean, of Barbadoes.

POISONING CASES.

Ellen Kelsey, 29, of Pimlico, was found lying on the bed dead. On the washstand was a pint bottle of carbolic acid, a quantity of which had been consumed. A post-mortem examination revealed that death was due to carbolic acid poisoning.

"Geemol" or "Sanitas"?—At the adjourned inquest on the body of Mrs. Ellen Harral, of Huddersfield (see *ante*, p. cxxxiv.), the evidence of the doctors who conducted the post-mortem examination was that undoubtedly the cause of death was asphyxia produced by a corrosive poison. The borough analyst handed in his report on the contents of the bottle from which the disinfecting fluid was taken, and on the contents of the stomach. The disinfectant contained tar acids, 12½ per cent., and also other ingredients. He extracted from the stomach one fluid ounce of liquid similar to that in the bottle. The contents of the bottle were not "Sanitas," but were similar to, although not exactly the same, as a disinfectant he had purchased as "Germol." The jury returned a verdict that deceased died from asphyxia, produced by a corrosive poison contained in a disinfectant called "Germol," administered by herself, but with what intent there was no evidence to show.

Morphine Hydrochlorate taken to induce sleep, caused the death of Vincent Hall, thirty-five, a pharmaceutical student, residing off Gray's Inn Road. Evidence at the inquest on December 18, tended to show that deceased, who had been working hard to pass his examinations, suffered from insomnia, and was in the habit of taking narcotics. "Death from misadventure" was the verdict.

Liquid Ammonia contained in a cup was accidentally swallowed by Ernest Wilkinson, of Upper Road, Batley Carr. He died from the effects, and the jury returned a verdict of "Death through misadventure."

Carbolic Acid placed in a saucer on the floor of a bedroom as a disinfectant, at 335, Gloucester Road, Bishopston, was drunk by a child aged two years and three months, death resulting from the shock.

NEWS IN BRIEF.

Brighton Junior Association of Pharmacy.—The last musical and social meeting of the autumn session was held at Newburgh Hall on Wednesday, December 16. There was a large number of members and friends present, and under the genial chairmanship of Mr. C. G. Yates and the provision of an excellent programme the proceedings were thoroughly enjoyed by all. A vote of thanks to the gentlemen who had so kindly assisted with the programme, and to Mr. E. A. Hedgcock for having always been ready to undertake the duties of accompanist, was proposed and heartily accorded. A vote of thanks to the Chairman, in reply to which he wished them all "A very Merry Christmas," terminated the programme. The first meeting of the winter session will be held on Wednesday, January 6, 1897.

C. A. Vogeler and Co.'s Circular.—At a committee meeting of the Plymouth, Devonport, Stonehouse and District Chemists' Association the following resolution was unanimously passed and a copy forwarded to Chas. A. Vogeler and Co:—

> "That this Committee support the following resolution passed at the meeting of the P.A.T.A., held December 16, 1896:—
> "'That the Council regrets to notice the action of the Chas. A. Vogeler Co. in relation to the chemists of Bradford, and recommends the various local associations connected with the P.A.T.A. to convey to this firm their disapproval of the action they have taken.'"

A Correspondent also remarks on the cool audacity with which the "Jacob's Oil" proprietor brands as unprincipled (see *ante*, cxxxiii.) the chemist who presumes to offer a liniment in competition with his. He remarks that it is a typical specimen of advertising "bluff" by which the unqualified individual seeks to exploit the qualified chemist as his mechanical distributor.

Messrs. Raimes, Clark, and Co.'s Social.—On Friday, December 18, the employés of Messrs. Raimes, Clark, and Co., Leith Walk, Edinburgh, held their annual social and dance in Lodge Trafalgar Hall, St. Anthony Place, Leith. Councillor Richard Clark, J.P., head of the firm, presided, Messrs. W. A. Davies and W. Duff being croupiers. After a well-served tea, Mr. Clark, in a few well-chosen sentences welcomed the large company. Afterwards an excellent programme was carried through. Mr. Radford, the senior representative, in proposing a vote of thanks to the firm for their kindness in providing the entertainment free of charge, congratulated Mr. Clark on the honours he had recently achieved, and on the great increase there was in the business. Mr. W. A. Davies proposed a vote of thanks to the artistes. The hall was then cleared for dancing, in which fifty couples took part, and which was kept up with unabated vigour till 4.30 a.m.

EXCHANGE—OFFERS AND WANTS.

Prepaid Notices not exceeding thirty words, including name and address, are inserted at a fee of Sixpence each, if they do not partake of the nature of ordinary advertisements. For every twelve words (or less) extra, the charge is Sixpence. A price, or two initials, will count as one word. The fee for use of the Serle Street address, including re-direction of replies, is Sixpence. The right is reserved to omit any notice if considered necessary. All communications should be addressed "Pharmaceutical Journal," 5, Serle Street, Lincoln's Inn, London, W.C., where notices can be received until 10 a.m. on Thursdays.

OFFERED.

Photographic Apparatus.

"X" Ray Lantern Slides, 16 splendid subjects, 6d. each; Fluorescent Cyanide for making your own screens, 5s. per ounce.—Pickering, Chemist, Leicester.

Mahogany Dispensing Screen 8 ft. long, 2 ft. high, with casing the entire length, and 4 plate glass doors, scroll on top "Prescriptions Dispensed."

OFFERED—(*continued*).

Price £2.—Nunn, Chemist, 313, Sydenham Road, S.E.

Miscellaneous.

Magic Lanterns, second-hand; Wrench's telescopic triple and biunial; Ladd's oxyhydrogen microscope; grand biunial patent pamphengos oil; lantern, gives 14-ft. picture; slides and effects, bargains; illustrated list post free, 2d.—Hughes, Brewster House, 82, Mortimer Road, Kingsland, N.

Christmas.—Glass frost for decorations, under 1 lb. posted, 1s. 6d., under 2 lbs., 2s. 10½d.; clean used club playing cards, strong square or thin round corners (cost new 2s. 6d., 3s. 6d.); card counters, imitation guineas, metal, 2s. per 100.—Foster, 80, Navigation Street, Birmingham.

Dr. Mackenzie's Arsenical Soap.—With a view of preventing any possible further prosecutions under the Food and Drugs Act, wholesale and retail houses are requested by Mr. S. Harvey to immediately exchange all Dr. Mackenzie's arsenical soap which they have in stock for that which is now being manufactured under a new formula, and guaranteed, amongst other ingredients, to contain a uniform, though small quantity, of arsenic, easily found by analysis. Mr. Harvey also undertakes to indemnify all chemists and druggists against prosecution, provided they exchange their present stocks immediately and sell only that which bears the imprint on the outside of label "New Formula," and where required he will give a warranty that Dr. Mackenzie's is a genuine arsenical toilet soap.

Death of an Old Manchester Chemist.—By the death of Mr. Thomas Roberts, which took place on Thursday last week, in his eighty-fourth year, at The Hollies, Kersal, Manchester loses an old and much-respected citizen. During a long life he was engaged, in a quiet way, in more than one department of public work, and the flag placed at half-mast at the Manchester Royal Infirmary reminded the public of his long connection with that institution as a life governor. Mr. Roberts was in business many years ago, being a member of the firm of Messrs. Mottershead and Roberts, chemists, in the old Market Place, and, later, head of the well-known firm of Roberts, Dale and Co., chemical manufacturers, of Manchester and Warrington.

Alderman Allwood Simpson, chemist and druggist, of Stalybridge, on December 1, was appointed Deputy-Mayor for the year.

Mr. John Macwilliam, chemist and druggist, has taken over the business formerly carried on by William Duncan, at 176, High Street, Elgin.

Alderman E. Palmer, chemist and druggist, ex-Mayor of Grimsby, on Thursday, December 19, was presented by the members and officials of the Corporation with a chastely designed silver tea and coffee service and salver, in recognition of valuable and efficient services rendered by him to his native town as Mayor and Chief Magistrate of the Burough during the years 1895 and 1896.

Theft from a Chemist.—At the Weston-super-Mare Police Court, on Thursday, December 11, before Messrs. T. Mullins, S. Harvey, and C. Hunt, Lawrence Hooper was charged on remand with stealing £10 belonging to Mr. William Henry Webb, chemist. The prosecutor deposed that on August 17 last the prisoner was in his employ as a porter, and on that day he sent him to the Wilts and Dorset Bank for the purpose of getting a cheque (produced) cashed. It was to the value of £10. He waited some time for the prisoner to return, and then, as he failed to put in an appearance, he sent to the Bank and found that the cheque had been cashed. He consequently gave information to the police, and the accused was subsequently arrested by Sergeant Richardson. Ernest Hopkins, Cashier at the Wilts and Dorset Bank, deposed that on August 17 the accused came into the Bank and requested him to cash the cheque for Mr. Webb. Witness did so, giving Hooper gold in return. the Bench committed the prisoner to take his trial at the next Quarter Sessions.

At the very successful Cookery Exhibition, under the auspices of Mrs. Marshall's School of Cookery, held at the Queen's Hall, Langham Place, on the 17th and 18th inst., besides the usual ball supper table display, there were several interesting competitions for awards offered by leading firms. Among others, Liebig's Extract of Meat Company, Limited, gave a gold, silver, and bronze medal, together with substantial money prizes, for the best three dishes containing the Company's well-known extract.

NEWSPAPER COMMENTS.

After Mrs. Le Champion's Suicide who shall say that there is any difficulty in obtaining as much poison as you want from a chemist—provided always you are well dressed? This unhappy lady bought a bottle of laudanum containing 4 ounces, together with some cotton-wool. She told the chemist that she wanted to steep the cotton-wool in the laudanum and wrap it round her arm, in which she suffered from rheumatic pain. It appeared from the evidence that Mrs. Le Champion was known to the chemist as a customer, but she was certainly unprovided with a prescription signed by a doctor. We believe that chemists nowadays refuse to sell poison for the destruction of cats and dogs, offering to perform the operation themselves, when it is a case of a customer. But the rheumatic arm is apparently better than the harmless, necessary cat.—*Saturday Review.*

The Parliamentary Bills Committee of the British Medical Association has now presented to the Privy Council in a very definite form the views entertained by the medical bodies as to the unrestricted sale of carbolic acid. Some years ago the Council of the Pharmaceutical Society advised that carbolic acid should be added to the schedule of poisons within the meaning of the Pharmacy Act. This is really the advice of the Parliamentary Bills Committee; and it is urged that it would not in any way interfere with the sanitary application of the poison as a disinfectant. The Committee goes so far as to say that carbolic acid is, under present conditions, the most dangerous of all poisons, and that there is thus an imperative duty on the Legislature to restrict its use.—*Manchester Guardian.*

A Very Curious Instance of the incapacity of the individual to detect the fact that he is really swallowing a burning and corrosive fluid when he thinks he is drinking something else comes from Drimbane, Ballyhanis. Two men drank what they supposed to be whiskey, but what was in fact carbolic acid, and were, of course, killed in a few minutes. Instances of a single person making this mistake are fairly common, but we should imagine that a case in which the first drinker did not discover his error in time to warn the second is unique.—*Globe.*

CORRECTION.

The Efflorescent Nature of Crystallised Quinine Sulphate.—At the end of line 24 of Mr. Cownley's paper (see *ante* p. 525) the figure 2 was dropped in some copies of last week's Journal.

DIARY OF THE WEEK.

Tuesday, December 29.

Royal Institution of Great Britain, at 3 p.m.
Christmas Lectures on "Visible and Invisible Light," by Professor Silvanus P. Thompson, B.A., D.Sc., F.R.S., M.R.I.
Lectures 2 and 3 will be given on Thursday, December 31, and Saturday, January 2, 1897.

Thursday, December 31.

Liverpool Pharmaceutical Students' Society, at 8.30 p.m.
"The Analysis of Beeswax," by R. C. Cowley, Ph.C.

Friday, January 1, 1897.

Royal Geographical Society, at 4 p.m.
"In Search of an Eclipse—the Coast of Norway," with lantern illustrations, by Dr. Hugh Robert Mill.